Brief Report

An Overview of the Infection, Mortality, and Vaccination Statistics of Covid-19 from the Beginning Until July 19, 2023

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A B S T R A C T

The coronavirus pandemic, caused by the SARS-CoV-2 virus, has emerged as a significant global threat to all countries and societies. Analyzing infection rates, mortality due to Covid-19, and the impact of vaccination, weather conditions, and demographic and ethnic composition on infection and mortality rates can provide crucial insights into this disease. SARS-CoV-2, the novel coronavirus causing acute respiratory syndrome, first emerged as a global pandemic in the Chinese city of Wuhan in December 2019. According to the World Health Organization (WHO), there have been 768,237,788 confirmed cases of Covid-19 reported worldwide, resulting in 6,951,677 fatalities as of July 19, 2023. Analyzing various factors like infection rates, mortality, vaccination, weather conditions, and demographics helps us understand the disease better. The United States has the highest COVID-19 death toll, while African countries have reported the lowest. However, Africa's high death-to-infection ratio might be due to inadequate healthcare services and vaccination rates, which require urgent attention. In addition, the relationship between environmental temperatures and COVID-19 cases and mortality is still under investigation.

Introduction

The coronavirus pandemic poses a global threat to all countries and societies. Examining infection rates, mortality due to COVID-19 infection, and the effects of vaccination, weather conditions, and demographic and ethnic composition on infection and mortality due to COVID-19 in continents, countries, and states can provide valuable information about this disease. This information is crucial for predicting future conditions of this pandemic or similar pandemics [1-3]. According to the report from the World Health Organization (WHO), as of July 19, 2023, there have been 768,237,788 confirmed cases of COVID-19, and 6,951,677 of them have died. As of July 10, 2023, a total of 13,474,267,147 doses of vaccine have been administered [4, 5].

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Materials and Methods

The WHO COVID-19 Dashboard: It is an online platform developed by the World Health Organization (WHO), providing real-time information and updates on the global coronavirus pandemic. Accessible at https://covid19.who.int/ , this resource aims to support public health efforts and promote transparency by offering comprehensive data on cases, deaths, and recoveries across countries, as well as offering guidance and recommendations to help curb the spread of the virus [5].

Methods: We used the WHO COVID-19 Dashboard online database for data collection and descriptive data analysis. The present study is a descriptive study that compares published results from the WHO COVID-19 Dashboard database [5].

Results and Discussion

The Number of Cases

Most cases have occurred in Europe, where the level of well-being, health, and health status is higher compared to the other societies. The climate in these regions is temperate and humid with high rainfall, which increases the possibility of virus transmission compared to dry climates. European governments have implemented measures to reduce human exposure to the virus in public places, and have controlled gatherings and movement. Certain races are more susceptible to specific viral diseases, with a high infection rate also seen in the United States of America. The disease is less associated with the African continent, where the climate and seasons are opposite to the northern hemisphere. Parts of Africa are within the equator and have higher latitudes that are often deserts. Acquired immune deficiency is prevalent in Africa, with the deadly experience of Ebola, but with fewer cases of Covid-19, although the death rate is not low compared to the number of infections [1-4].

Human immune system plays a crucial role in both inhibiting and potentially promoting infections, such as COVID-19. In certain regions, immunosuppressive steroid drugs like dexamethasone and prednisolone have been administered to patients. A comprehensive review of corticosteroid therapy in COVID-19 patients has produced mixed results from various studies. The large-scale RECOVERY trial demonstrated significant benefits in reducing death rates among severely ill patients requiring ventilators or supplemental oxygen. However, these benefits were not observed in mild cases. The current evidence on corticosteroids in COVID-19 treatment is heterogeneous, primarily derived from non-randomized studies. As a result, there is a need for more randomized controlled trials to confirm the role of corticosteroids in managing the disease. On the other hand, excessive immune activation due to the virus can accelerate viral replication and transmission within communities. Immunosuppression, while delaying recovery, can also prolong treatment and lead to long-term complications. Overcoming the acute phase of the disease has, in many societies, resulted in long-term complications and increased the time infected individuals act as carriers, thereby raising the risk of transmission [6,7].

During the COVID-19 pandemic, decision-making for critically ill patients has been complex and challenging, as various treatment options have emerged. Some of these treatments, such as low-dose prednisolone and tacrolimus, may offer potential benefits in managing the disease. However, the role of mycophenolate mofetil remains uncertain due to conflicting pre-clinical data. While there is no definitive evidence that specific cytotoxic drugs, low-dose methotrexate, nonsteroidal anti-inflammatory drugs (NSAIDs), Janus kinase (JAK) inhibitors, or anti-tumor necrosis factor-alpha (TNFα) agents are contraindicated, further research is required to fully comprehend their implications in COVID-19 treatment and management. The association between peak interleukin-6 (IL-6) levels and the severity of pulmonary

complications in COVID-19 patients has been well-established. Elevated IL-6 levels are indicative of a more severe disease course, which may lead to a worsening of the patient's condition. Consequently, understanding the role of IL-6 in COVID-19 pathogenesis and employing targeted therapies, such as tocilizumab (an IL-6 receptor antagonist), has become an essential aspect of managing critically ill patients. As the pandemic continues, ongoing research and clinical trials will help refine our understanding of effective treatment strategies and improve patient outcomes [8-10].

Mortality Rate As a Result of the Disease

Mortality rates due to the disease vary across different regions. The highest mortality rate is seen in the United States of America, where nearly 3 million out of the country's almost 300 million inhabitants are affected, representing close to one percent of the population. Europe also experiences a high number of deaths, with a total of 5,203,343 deaths in Europe and America combined, equivalent to 0.748 percent of global deaths. This trend is more prevalent in temperate and humid regions with abundant rainfall, typically found in developed countries with predominantly white populations. Africa has the lowest death rate globally, with 175,408 reported deaths. Southeast Asia also has a high death rate. In comparison, Western Pacific countries have a lower mortality rate, possibly due to vaccination efforts [3,5,6].

Mortality-to-Infection Ratio

The mortality-to-infection ratio is highest in Africa, potentially due to a higher prevalence of acquired immunodeficiency, poverty, and limited access to healthcare services. The Americas and the eastern Mediterranean also have high mortality rates, despite relatively good healthcare systems, suggesting other factors such as weather conditions or racial disparities may play a role [3,5,6].

Table 1 The incidence, mortality, and vaccination rates in the world and in regional areas according to the report from the World Health Organization (WHO) [5]

	African continent	American continent	Southeast Asia	Eastern Mediterranean	European continent	Western Pacific Ocean	Worldwide
Total number of infections	9,543,552	193,162,133	61,194,724	23,384,877	275,760,968	205,190,770	768,237,788
Cases reported in the last 7 days	906	17,543	1,395	203	5,875	211,440	237,362
Cases with fatality	175,408	2,958,126	806,549	351,356	2,245,217	415,008	6,951,677
Deaths in the last 7 days	9	225	18	No case	91	148	491
Ratio of deaths to total number of infections	0.0183	0.01531	0.0131	0.0150	0.0081	0.0020	0.0090
Doses of vaccine administered per 100 persons	55	208.05	165.75	122.98	185.25	241.87	172.87
Percentage of people who received at least 1 dose	31.51	71.21	69.19	51.39	64.6	85.47	65.92
Vaccinated persons with at least one booster or additional dose per 100 inhabitants	5.09	42.42	21.07	18.96	35.23	55.45	31.73

Vaccinations: The number of vaccine doses administered per 100 population is presented in Table 1, with the highest vaccine consumption in the Pacific West. More than 85% of the population received at least one dose of the vaccine. The results are evident in overall morbidity and mortality. In the African countries that had the lowest vaccination rates, only 31.51% of the population received at least one dose of the vaccine, and the morbidity and mortality statistics were also lower. This statistic is not solely due to lower incidence, as the ratio of deaths to infections was higher than in the world as a whole. Vaccination statistics for the Eastern Mediterranean countries were also low, with 51.39% of the population receiving at least one dose of the vaccine, but morbidity and mortality statistics were also lower. Is the vaccine effective? It appears that vaccination has been very effective in the Western Pacific countries, miraculously reducing the ratio of deaths to infections [3-5].

Conclusion

While the coronavirus has caused significant harm in Western countries like the United States, it has had a relatively lower impact on African nations. This disparity could be attributed to factors such as climate, healthcare infrastructure, and vaccination rates. It is crucial to address these inadequacies and continue researching the relationship between environmental factors and COVID-19 transmission to better understand and combat the pandemic globally.

Acknowledgements

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