



Opinion

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COVID-19 Lethality: Insights from Case Fatality Rate

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To Cite This Article: Jayadevan S, Nafeesa Abdul K, Anusha S, Jayakumary M. COVID-19 Lethality: Insights from Case Fatality Rate. Am J Biomed Sci & Res. 2023 18(4) AJBSR.MS.ID.002513, DOI: [10.34297/AJBSR.2023.18.002513](https://doi.org/10.34297/AJBSR.2023.18.002513)

Received: 📅 April 20, 2023; Published: 📅 May 05, 2023

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The COVID-19 pandemic has affected every country, with over 500 million confirmed cases and more than 10 million deaths reported as of March 2023 [1]. The COVID-19 pandemic has led to various public health measures, including lockdowns, travel restrictions, and mask mandates, being implemented globally. A study of lockdown measures in eleven European countries found that these measures were associated with a significant reduction in the spread of COVID-19 and deaths [2]. Similarly, a study of mask mandates in the United States found that these measures reduced the incidence of COVID-19 cases [3]. However, some have argued that these measures are overly draconian and have caused harm to individuals and economies. In this context, it is important to consider the Case Fatality Rate (CFR) of COVID-19 across different countries and regions and to assess whether current measures are justified. A study by Sreedharan, et al. [4], suggested that nationwide lockdown measures to prevent the spread of the virus have given hardships for the population and a negative impact on the economic system [4].

One of the most important metrics for understanding the impact of the pandemic is the Case Fatality Rate (CFR), which is the percentage of people who die after being diagnosed with the virus. The CFR of COVID-19 has varied widely across countries and regions, with some areas experiencing much higher death rates than others. Studies showed countries with older populations and higher rates of comorbidities, such as diabetes and heart disease, have tended to have higher CFRs. Italy, one of the countries in Europe with a

higher proportion of the old population and a high prevalence of comorbidities, reported a CFR of more than 10%. Countries with younger populations and fewer underlying health conditions, such as South Korea and Singapore, have had much lower CFRs, with rates below 1% [5,6]. One study in seven countries analyzed the severity and consistency of sex differences in age-specific case fatality rates and found that the CFRs were greater in males across all age groups [7]. Another factor that has influenced the CFR of COVID-19 is the capacity of the healthcare system and the quality of healthcare services. Countries with well-resourced and efficient healthcare systems reported lower CFRs, as they can better provide patients with essential care and treatment. Countries with weaker healthcare systems have struggled to cope with the demands of the pandemic, leading to higher CFRs. In Brazil, where the healthcare system has been overwhelmed by the pandemic, the CFR estimated was high during the entire period of the pandemic [8]. The CFR of COVID-19 has also varied over time; as healthcare professionals have gained more experience in treating the disease and new treatments, vaccines have become available and improvement in the treatment-seeking behaviour of the community. In the United States, the CFR declined steadily throughout the pandemic, from a high of over 6% in April 2020 to around 1% in early 2022 [9]. When analyzing the case fatality rate of COVID-19, it is important to take into account the criteria used to determine a COVID-19 death, as this varies across countries. One possible reason for the higher CFR observed in North America and Western Europe could be the inclusion of deaths in individuals who had COVID-19 but may have died from other causes [10].



It is important to note that the CFR of COVID-19 is only one metric for measuring the impact of the pandemic. The decline of CFR has been attributed to various factors, including improvements in treatment protocols, increased testing capacity, and the availability of vaccines. Other factors, including the age and health status of the population, the capacity and quality of healthcare systems, and the change in treatment-seeking behaviour, also played a role in determining the CFR of COVID-19.

The wide variation in CFRs across different countries and regions suggests that the impact of COVID-19 has been highly context-dependent. Measures that may be appropriate in one country or region may not be applicable in another. Therefore, it is important to tailor public health measures to the specific circumstances of each country or region.

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