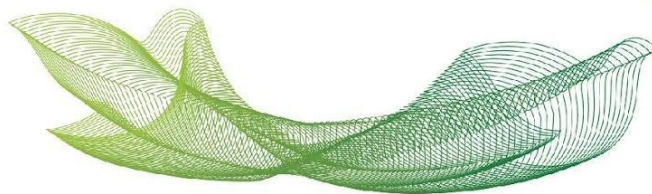


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Título	Human Development Index Is Associated with COVID-19 Case Fatality Rate in Brazil: An Ecological Study
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Resumo	<p>The Human Development Index measures a region's development and is a step for development debate beyond the traditional, economic perspective. It can also determine the success of a country's response to the COVID-19 pandemic, mainly affecting the case fatality rate among severe cases of SARS-CoV-2 infection. We aimed to associate the Human Development Index with the case fatality rate due to COVID-19 in each Brazilian state and the Federal District, taking into account comorbidities and the need for invasive mechanical ventilation. We also evaluated the influence of the GINI index, number of intensive care unit beds, and occupied households in subnormal clusters on the case fatality rate. We performed an ecological study including two populations: COVID-19 individuals that did not require the mechanical ventilation protocol; and COVID-19 individuals under invasive mechanical ventilation. We performed a Pearson correlation test and a univariate linear regression analysis on the relationship between Human Development Index, Human Development Index-Education Level, Human Development Index-Life Expectancy, and Human Development Index-Gross National Income per capita and COVID-19 deaths. The same analyses were performed using the other markers. We grouped the patients with COVID-19 according to comorbidities and the need for invasive mechanical ventilation. Alpha = 0.05. We included 848,501 COVID-19 individuals, out of which 153,710 needed invasive mechanical ventilation and 314,164 died, and 280,533 COVID-19 individuals without comorbidity, out of which 33,312 needed invasive mechanical ventilation and</p>



	<p>73,723 died. We observed a low negative Pearson correlation between the Human Development Index and death and a moderate negative Pearson correlation between the Human Development Index and deaths of individuals on invasive mechanical ventilation, with or without comorbidity. The univariate linear analysis showed the case fatality rate depends on at least 20-40% of the Human Development Index. In Brazil, regions with a low Human Development Index demonstrated a higher case fatality rate due to COVID-19, mainly in individuals who needed invasive mechanical ventilation, than regions with a higher Human Development Index. Although other indexes studied, such as intensive care unit beds and GINI, were also associated with the COVID-19 case fatality rate, they were not as relevant as the Human Development Index. Brazil is a vast territory comprising cultural, social, and economic diversity, which mirrors the diversity of the Human Development Index. Brazil is a model nation for the study of the Human Development Index's influence on aspects of the COVID-19 pandemic, such as its impact on the case fatality rate.</p>
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