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On Race and the Environment in the COVID-19 Pandemic



The role of race and ethnicity and potential effects of environment and temperature in the COVID-19 pandemic receives brief mention in the mass media and more lasting scrutiny in social media and academic circles.^{1,2} The higher incidence of COVID-19 infection and death in Black and Brown American citizens is often linked to well-known health and social disparities and the pandemic is rightfully leveraged to address these. Higher environmental temperatures have been touted by some as a natural way to mitigate virus spread and survival, but there is little proof that this is the case.³ The report by Li et al. is a rigorous and dispassionate analysis of Black race and environmental temperature on the incidence and mortality in COVID-19 infection.⁴ The authors obtained data on all counties in the United States, focusing on 661 counties with 50 or more cases and 217 with 10 or more deaths at the time of data collection. Their analysis, using sequential multivariate analysis to minimize confounding variables, found that Black race is a risk factor for increased COVID-19 cases and deaths per 100,000 independent of various socioeconomic and health-related factors. They also found that higher environmental temperatures were associated with a lower incidence of infection, but did not appear to impact mortality. Importantly, they discovered that Black race is independent of the health and socioeconomic factors that they were able to analyze, although the latter require decades, if not generations, to adequately study. The authors proffer that more “granularity” and accumulation of data is needed to support their findings and uncover important disparities that our society must address to mitigate the impact of the pandemic.

The work by Li and colleagues focuses on the COVID-19 pandemic and role of race in the United States. But what about the rest of the world? The bulk of the pandemic population studies are from China where COVID-19 originated and the understanding of “race” is radically different from that in Western cultures.⁵ The best evidence for the role of race in other countries is emerging from Brazil, a nation that shares similar health and social racial disparities with the United States. The authors of a paper titled “Socioeconomic analysis of the mortality rate of COVID-19 in Brazil” analyzed a national registry of reported infections and found that mortality is significantly higher in their citizens of African descent.⁶ They recorded that in Whites hospitalized with COVID-19 infection, 62% recovered and 38% died compared to 45% and 55% respectively in Black and Brown persons with the infection. Interestingly, they found that a low level of education and illiteracy coupled with Black and

Brown race were associated with double the deaths on the hospital wards and a 60% higher intensive care mortality compared to educated Whites, suggesting that findings are not explained by genetics alone.

The paper by Li et al. used the mean county temperature calculated from 10 days before the county’s first case and April 14, 2020. Higher temperatures were associated with reduced numbers of cases, but not mortality. Their findings were consistent with the seasonal variations in caseloads noted for the SARS-CoV epidemic in 2003 and yearly influenza outbreaks. They cite a possible mechanism that cooler temperatures and lower humidity stabilize viral particles and allow smaller viral-containing droplets to stay airborne longer. The opposite is presumed to occur in warmer and more humid conditions where particles are less stable and air droplets are larger and “rain out” sooner. One might also speculate that warm humid conditions might result in lower infectious viral doses, thereby producing less symptoms and discoverable cases. However, this theory does not easily explain why environmental temperature had little to no effect on disease mortality. Importantly, as the virus continues to evolve, it is possible that earlier epidemiological relationships might change. For example, COVID-19 cases are currently soaring in Southern regions of the United States yet mortality has so far remained very low. Regardless, sparse literature has addressed the effects of infectious dose and viral load in COVID-19, although existing observations are nicely summarized by investigators at the centre for Evidence-Based Medicine at the University of Oxford.⁷

In summary, the paper by Li et al. is timely in this era where the COVID-19 pandemic converges with events that expose “baked-in” marginalization of African-Americans. Socioeconomic barriers limit opportunities that lead many Black and Brown citizens to lower skilled, but essential services that impede social distancing and put more of them in the front lines of the COVID-19 battlefield.

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