

# COVID-19 and ethnicity: has history repeated itself?

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In the year since its discovery, the novel virus SARS-CoV-2 has spread across the world and ignited, in a short pace of time, an entire area of research into its origins, symptoms and outcomes of the resultant disease (COVID-19), possible treatments and contributing risk factors. The speed at which this field has grown has enabled us to more proactively treat individuals with COVID-19 and has brought us to the precipice of mass vaccination against this virus. But, despite being a new field of study led by 21st century scientists, research into COVID-19 has fallen into the same pitfall present in older, more established areas of research—namely, the unconscious biases associated with ethnicity.

In the spring of 2020, the first evidence from the UK was published showing that COVID-19 has a greater impact on black and minority ethnic (BME) populations than white population. Amid calls for further investigation, more and more studies have included ethnicity as a possible predictor for COVID-related outcomes.<sup>1</sup> While these studies have demonstrated the greater impact of COVID-19 on these communities, they have re-established, again, the innate biases present within both human society and scientific research. The inclusion of ethnicity as a predictive factor for COVID-19 infection or mortality contains the flawed logic that people of different ethnicities are biologically distinct,<sup>2</sup> with different genetic factors that may predispose or protect them from a disease such as COVID-19. This concept is not a new one, originating first in 1795 with the description of five different races by Johann Friedrich Blumenbach. Even in this first instant, the described races were not described as genetically distinct but equal but with the ‘Caucasian’ race being described as superior, and this has helped set the stage for ethnic inequalities that

continue to influence society and medicine today.

In the case of COVID-19, there is no evidence of genetic differences that may predispose minority ethnicities to worsened outcomes after SARS-CoV-2 infection. Suggestions made about the differences in the expression of angiotensin-converting enzyme 2 (ACE2)<sup>2</sup>—the receptor recognised by SARS-CoV-2 and used to gain entry into cells—are disputed by evidence that some minority ethnicities have reduced expression of ACE2 and, therefore, should be protected against COVID-19, not experience greater numbers of infections and deaths.

So why are minority ethnicities dying from COVID-19?

Statistically, biases occur within research through the inclusion or exclusion of different factors as possible contributors to the outcome of interest—in this case outcomes related to COVID-19. This leads to the presence of confounders or colliders that modify the effects of an association between the included predictor variables and the outcome. And yet, scientists can neglect the possibility of confounding biasing their findings by not adjusting for possible influencing factors. In a recent systematic review<sup>1</sup> examining the effect of ethnicity on clinical outcomes related to COVID-19, the authors examined 227 studies for inclusion in the analysis. In their own words ‘at least 147 (65%) studies could have disaggregated outcome data by ethnicity or presented adjusted analyses, but did not do so’, highlighting that in the rush to publish authors are disregarding possible biases and presenting data that may show exaggerated effects of predictors such as ethnicity.

Several factors may be influencing the relationship between COVID-19 and ethnicity. Within the UK, people of minority ethnicities are more likely to live below the poverty line, reside in overcrowded housing or in urban areas, have lower educational attainment, work in insecure employment, be self-employed or work in key healthcare/customer facing job—factors that can also influence their susceptibility to SARS-CoV-2 infection and could be present as confounders in

statistical analyses. A number of these (including income, employment, education and living environment) contribute to the variable defined as socioeconomic deprivation, which can be objectively defined using various scoring systems. Despite the availability of these measures, deprivation is rarely included as a potential predictor of COVID-19. Of the 50 studies ultimately included in the above systematic review,<sup>1</sup> only 15 accounted for the effect of deprivation.

Key studies (such as that by Williamson *et al*<sup>3</sup>) that do assess the effect of both ethnicity and deprivation on mortality from COVID-19 showed a disproportionate effect in both those from minority ethnicities and from the most deprived populations. Adjusting for each other (as well as other known confounders such as age, sex, obesity and comorbidities) attenuated the effect of both ethnicity and deprivation but did not absolve their effects. This highlights the importance of understanding other possible contributors, particularly the social issues around ethnicity. These results suggest that deprivation and ethnicity are at least partially influencing each other in their effect on COVID-related mortality, but even accounting for deprivation, the effect of ethnicity remains suggesting other factors—likely those that are harder to quantify—are involved.

One factor to acknowledge when talking about deaths due to COVID-19 is that those from minority ethnicities have a higher prevalence of COVID-19<sup>1</sup> in the first place. This combined with evidence that the distribution of ethnicities across asymptomatic, mild, moderate and severe cases of COVID-19 is comparable suggests that a key component of the effect of ethnicity in COVID-related mortality is the likelihood of the initial infection—a component not acknowledged in most of the above studies examining COVID-related mortality.<sup>3</sup>

Alongside this issue of increased prevalence of COVID-19 in minority ethnicities as a whole is high numbers of people from BME communities who are healthcare workers facing an increased risk of exposure to SARS-CoV-2. This occupation would not typically be linked to deprivation and so presents a unique contributing factor, unexamined in the relationship between ethnicity and COVID-19. Examining seroprevalence within healthcare workers has shown that even within this population those from minority ethnicities are more likely to have been exposed to SARS-CoV-2 than their white counterparts, possibly contributing to the stark

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statistic from the first wave that two-thirds of UK healthcare workers who have died from COVID-19 came from minority ethnicities.<sup>4</sup> Within the seroprevalence study deprivation was not found to be a contributing factor, but a BMA survey of doctors highlights other unique social pressures that those from BME communities face. Pressures to work long hours while wearing inadequate protective equipment combined with inadequate managerial support experienced by doctors of minority ethnicities suggest that systemic inequalities may be playing a role in the overexposure of those from minority ethnicities to SARS-CoV-2.

The occupation as a healthcare worker is not the only area where systemic exposure gap is likely to influence the relationship between ethnicity and COVID-19. From adjustments made in physiological measures/risk scores based purely on ethnicity to implicit biases of treating doctors,<sup>5</sup> exposure gap can influence all areas of patient treatment for COVID-19 and are unlikely to be seen in objective measures such as scores of deprivation. This is evident in the correlations that can be made between the worsened

COVID-related outcomes experienced by those of minority ethnicities and the ethnic disparities seen in other fields including cardiovascular disease, cancer and asthma. Overall, COVID-19 research seems to be falling into the same traps as existing fields of medicine and demonstrate that scientific research has a whole has not moved on from the historical ideas that race is a determinant of genetic differences.

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