Are clinical outcomes from COVID-19 improving in ethnic minority groups?

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Disproportionately worse COVID-19 clinical outcomes in people from ethnic minority groups have been a concern since early in the pandemic.[1] Now as time progresses, it may be useful to look back at the evolving evidence base. We performed the first systematic review on clinical outcomes in ethnic minority groups in May 2020, where we found across several countries a higher proportion of patients from ethnic minority groups infected with SARS-CoV-2, admitted to intensive care units with COVID-19 and dying in hospitals due to COVID-19. However, the collected data was of too poor quality to allow meaningful data synthesis.[2] Our findings were used as evidence for debate in UK Parliament in June 2020, resulting in a recommendation to mandate comprehensive ethnicity data collection and recording as part of routine hospital data collection systems.[3]

After some time, more studies started to emerge. This allowed us to conduct a meta-analysis to disentangle why ethnic minority groups were suffering disproportionately from the pandemic. In our second review, published in November 2020, we found that ethnic minority groups in the UK and USA had an increased risk of SARS-CoV-2 infection compared to those of White ethnicity. However, differences in hospitalization and death rates in this meta-analysis, when synthesised, was less clear.[4] Whilst many studies reported a higher mortality rate from COVID-19 among ethnic minority groups compared to the majority groups, in the generation of mortality estimates, most did not take into account the number of infected individuals from ethnic minority groups in the community (see Fig. 1, Panel A). In our latest meta-analysis published in March 2023, now including over 200 million study participants globally, the risk of infection remained elevated across nearly all ethnic minority groups studied, compared to the majority group in each country.[5] However, we observed far smaller differences for hospitalisation, intensive care admission and death following infection, although there was evidence of ethnic inequalities in these outcomes. Therefore, at least initially, it appeared that increased risk of infection was the main driver of the disproportionate outcomes in ethnic minority groups (see Fig. 1, Panel B). Our work was cited by the World Health Organization's living guideline on COVID-19 infection prevention and control, emphasizing the need for healthcare workers from ethnic minority groups to have equal access to personal protective equipment.[6]

Concrete data identifying and quantifying factors relating to SARS-CoV-2 infection remains limited, compared to risk factors for developing severe disease once infected. In an immunologically naïve population, mathematical models have proposed that the increased risk of infection with an airborne pathogen is related to a higher frequency and/or duration of exposure to individuals who emit high quantities of the virus in poorly ventilated spaces.[7] Infection is therefore most likely to occur in homes and workplaces with poor ventilation and in occupations involving public-facing roles such as healthcare, even during mandated national lockdowns, all of which are common among those from ethnic minority groups. The higher prevalence of multi-generational occupancy within the homes of ethnic minority groups, which are more likely to have poorer ventilation, may also predispose them to a higher risk of infection.

To complicate matters, we now know that past infection with SARS-CoV-2 provides immune protection against severe disease for at least 40 weeks following infection, regardless of variants.[8] While COVID-19 in immunologically naïve populations may have resulted in worse clinical outcomes for ethnic minority groups compared to the majority groups, a history of previous

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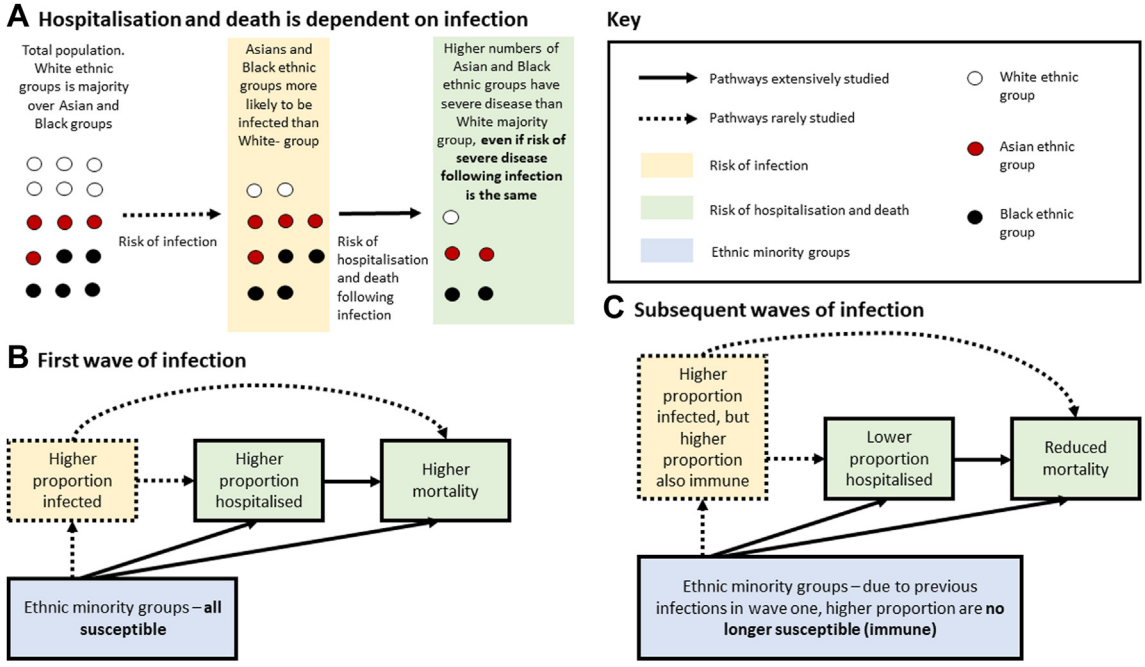

Fig. 1: Panel A: Dots represent proportions of those from different ethnic groups. A higher number of people infected with SARS-CoV-2 in the total population from ethnic minority groups would mean that a higher number of ethnic minority groups are hospitalised with COVID-19, even if the risk of hospitalisation remains the same across all ethnic groups. Panels B and C are simplified Directed Acyclic Diagrams, which show how hospitalisation and mortality may change between different waves of SARS-CoV-2 infection, depending on the number of people infected from ethnic minority groups.

infection in those who have survived their first infection, and therefore have existing immunity that protects against severe disease may have reduced the proportion of those who are susceptible to hospitalisation, intensive care admission and death from COVID-19 (see Fig. 1, Panel C). This could explain the UK's Office for National Statistics most recent report, which shows that the proportion of deaths from COVID-19 in ethnic minority groups are now comparable, and in some cases lower than that of the White British majority.[9]

Going forwards, we must implement tangible interventions that reduce the likelihood of infection among ethnic minority groups, which may still be ongoing. This will require policy-makers to address the longstanding inequalities that have led to an elevated risk of virus exposure in ethnic minority groups. In 2010, the Marmot review highlighted the need to reduce systemic racial inequalities in the UK and set clear policy objectives to address this. Ten years later, in the peak of the pandemic, the 2020 Marmot Review on Health Inequalities reported that housing affordability, declines in education funding, and an increase in zero-hour contracts are worse for ethnic minority groups compared to the previous report.[10] Over the past three years, one thing has become clear: systemic inequality is likely the root cause of disproportionate deaths from the COVID-19 pandemic in ethnic minority groups. We now have a unique opportunity to rebuild, plan ahead and work with communities from ethnic minority groups. Only by reducing the systemic gap in the risk of infection can we reduce preventable deaths from the next global pandemic.

Contributors

DP, SS, PI and MP conceived the idea of the manuscript. DP wrote the initial draft of the manuscript. All authors reviewed the manuscript and approved the final version prior to submission.

Declaration of interests

KK is Chair of the Ethnicity Subgroup of the UK Government Scientific Advisory Group for Emergencies (SAGE) and a member of SAGE. SVK was co-chair of the Scottish Government Expert Reference Group on Ethnicity and COVID-19 and a member of the Ethnicity Subgroup of SAGE. MP reports grants from the UKRI-MRC, NIHR, Sanofi and Gilead outside the current work and has received consulting fees from QIAGEN.

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