



COVID-19 and ethnicity: Spotlight on the global rheumatology issues in developing and developed countries

A key issue in the response to the coronavirus disease 2019 (COVID-19) pandemic is the internationally recognized observation that COVID-19 disproportionately affects the Black and minority ethnic population (BAME).¹ We focus predominantly on UK, USA, and India COVID-19 rheumatology challenges and examples. This unprecedented public health crisis started in China in December 2019, following an infection caused by a novel coronavirus strain, named as SARS-CoV2.² The World Health Organization in March 2020 declared this public health emergency as a pandemic.² COVID-19 pandemic has moved from country to country, peaking at different times despite implementation of strict preventive measures, including complete lockdown periods with varied success. Case mortality rates have been highly variable across nations as well as different ethnic groups.³

A number of observational studies from UK and USA indicated that the death rate of COVID-19 is disproportionately higher in BAME.^{4,5} The plausible reasons for increased mortality could be poor socio-economic status, poor housing, pre-existing comorbidity, obesity, and vitamin D deficiency.^{6,7} The ongoing observations even implicate genetic variation in BAME groups for increased mortality.⁵ Some genetic differences may in fact be relevant such as variations in angiotensin-converting enzyme receptor levels in BAME patients⁸ and undiagnosed metabolic syndrome in South Asian communities may also be contributory, given that diabetes is such a key predisposition in the UK.⁹ Even among healthcare workers (HCW), where most of these factors may not be operative, the mortality has been higher in HCW from BAME backgrounds.⁸ Although data from the Office of National Statistics in the UK linked the increase deaths of BAME to age, gender, co-morbidities and occupation,⁹ the data remain inadequate.⁶ The variation in COVID-19 testing among BAME, HCW and front-line workers maybe a possible reason for increased reported deaths, as patients not admitted to hospital were not included initially in mortality figures.⁶ These observations need further investigation and the UK Government has initiated inquiry by Public Health England.^{6,7}

The increased migration from India, Pakistan, Bangladesh and other South Asian countries to developed countries such as UK and USA, with the USA particularly benefiting from the influx of Hispanic individuals, have played an important role in economic growth of

these countries. However, the gaps in health inequalities among minorities were always there.⁴ In the USA, analyses of COVID-19 deaths from different states that house various ethnic populations revealed more deaths in Asians, Hispanics and African-Americans than in White Americans.^{4,6} Many people from ethnic minorities hold critical skilled or unskilled jobs in health and social care, retail, public transport, and other sectors, putting them on the front line and at risk of exposure to COVID-19.⁶ Data from Australia, though, showed low mortality in general, but had higher representation in migrant populations.³

Surprisingly the death rate due to COVID-19 in India and other Asian countries is low relative to Western countries.¹⁰ Furthermore, the majority of patients are asymptomatic or have milder symptoms and need for intensive care support is lower compared to developed countries.¹⁰ The population of India (1 387 297 452) is 4 times that of the USA (331 002 651); however, the number of cases as well as deaths due to COVID-19 has been very low in India. On May 18, the WHO reported 3029 deaths in India among 96 169 total cases, which contrasts with USA, where 87 180 deaths have been reported among 1 432 265 cases.² While under-reporting of cases due to non-reporting, low testing figures, higher false negative rates due to improper training of healthcare staff, as well as collection and handling of samples, are likely to have contributed, large numbers of deaths could not have gone unnoticed. Moreover, case fatality rates vary between different states (0.0%-9.1%), and it is impossible to factor in the differences that might result in the variation.⁶ For example, states reporting less than 0.5% to gross domestic product (GDP; equivalent to some of the African nations' total GDP) have no mortality.¹¹ This means socio-economic factors may not fully explain the differences. There is perceptible stigma among the patients as well as healthcare workers as they don't come forward for testing; how this will affect the incidence and case fatality rates is difficult to compound.¹² This is something similar to minority ethnic populations across the world.¹³ For sure the discrepancy between higher deaths in BAME in developed countries compared to countries of origin remain complex.³ Socio-economic deprivation gaps are heightened during these challenging times.^{10,14} The increased deaths are also linked with pre-existing respiratory diseases in developed countries; however, respiratory diseases are more common in

This is an open access article under the terms of the Creative Commons Attribution-NonCommercial License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited and is not used for commercial purposes.

© 2020 The Authors. International Journal of Rheumatic Diseases published by Asia Pacific League of Associations for Rheumatology and John Wiley & Sons Australia, Ltd



India.¹⁰ Clearly, there is disparity in COVID-19 deaths among ethnic minorities between developing and developed countries. Other than these medical reasons, bureaucratic issues and political pressures go unaccounted for in most reports.⁴

These global patterns present challenges for rheumatology communities serving populations from BAME backgrounds.¹³ Certain rheumatic diseases are more common among BAME groups, such as systemic lupus erythematosus (SLE).^{15,16} Previous studies from the UK identified health inequalities in managing chronic diseases, such as rheumatoid arthritis and SLE.^{17,18} Studies demonstrated patient-related factors may play a key role in adherence to treatments among BAME rheumatology patients.^{19,20} The patient-related factors noted in studies are similar to those from developing and developed countries.^{21,22} A significant analytical challenge is that these patients are on various immunosuppressive treatments, which also increase the risk of infections.²³ However, data suggest the medications used in rheumatology, such as tocilizumab and anakinra, may have some beneficial effect in COVID-19 patients.^{24,25} Although trials and registries have been set up, BAME patients are usually under-represented. The Global COVID-19 Rheumatology registry is trying to overcome this.²⁶ Being a global alliance, this might help us comprehend the complex interactions between COVID-19, rheumatological diseases and ethnic diversity.²⁷

In the UK, rheumatology colleagues, together with patient rheumatology charities, acted independently of governmental efforts to reach out to BAME communities where English language proved to be a problem in understanding the guidelines around COVID-19.¹³ Working closely with policy makers, such as the British Society for Rheumatology, to collect departmental data on patient shielding was also an initiative taken by some of the authors. The UK Government developed a screening formula to identify those "at risk" for taking immunosuppressive treatment to be directed to shield for 12 weeks. As the lockdowns across countries release, the challenges for each country will vary. For example, in the USA, Black or African American minorities and Hispanic groups are less likely to have health insurance, with consequent reduced healthcare access.⁴ Moreover, in some cases the insurance policy benefits may be lost due to unemployment. Of course, there are many factors influencing baseline health status and subsequent access to health care. The casualization of the workforce, particularly younger persons, and particular trades, for example hospitality, has meant that in any downturn they become unemployed, yet may not be eligible for the same support. Furthermore, in places like Australia if a business was closed because of a lockdown or insufficient work, even though people may not be unemployed and will return to the business when it resumes, people are unable to access their sick leave. In other countries, public health insurance is enmeshed with employment, and may not be part of casual employment.

Similarly, in India, the challenges to accessing health care due to loss of wages and lack of health insurance as well as disability allowances, and long-distance travel to reach a hospital, are overwhelming. In addition, there is limited availability of hydroxychloroquine and immunosuppressive drugs at local medical shops and

hospitalization is difficult for serious patients as most hospitals are working at lower capacity and some are wary of admitting patients due to fear of COVID-19 infections. This has been further complicated by the lockdown and inability to access health facilities at tertiary care centers due to lack of public transport. It is arduous to get permission from administration to travel under prevailing circumstances. However, the silver lining is that many of our rheumatic disease patients are relatively young, therefore at working age. It is difficult to contemplate how these services will resume once lockdowns are relaxed; rheumatologists working as private practitioners will be unsure how to start their services and administrations in government hospitals are busy reorganizing scarce resources around tackling COVID-19 and non-COVID-19 emergencies.

From the spotlight on the data and discussion above, we consider there are at least 3 areas that merit global prioritization. First, there is an urgent need to understand more deeply the reasons behind and implications of a disproportionately high clinical impact of COVID-19 on certain ethnic groups; second, there is public policy and how this should be framed within individual countries to adapt to needs of diverse population groups; third, there is the issue about communication of intelligence about COVID-19 to ethnic groups. Understanding the reasons for the initial evidence of excess mortality in BAME and minority groups is essential for the successful implementation of mitigation strategies, particularly if substantial disease emerges in the future. Epidemiologic and scientific studies may lead to more targeted health interventions.¹⁴ A range of different studies is needed to investigate this from the scientific and treatment perspective and from a global public health viewpoint. In the USA the National Institute of Minority Health and Disparities (NIMHD) is soliciting such studies.²⁶ In the UK the National Institute of Health Research (NIHR) and the UK Research and Innovation (UKRI) are jointly calling for research proposals to investigate the evidence and impact of COVID-19 on ethnicity.⁶ Concerns are being voiced about the particularly high risk of healthcare and other key workers who belong to BAME groups, as well as more generally, the evidence of a poorer outcome from COVID-19 infection in people from BAME backgrounds. These studies should provide us the results for effective control and treatment. In order to achieve health equity in vulnerable groups it is essential that trials should include diverse participants who may be at high risk, and take cognizance of the factors that may impose added vulnerability for risk stratification. This is particularly important for patients with rheumatic diseases, wherein many conditions are linked to the immune system, and patients may be on multiple medications that include immunomodulatory as well as immunosuppressive therapy.^{24,28} Additionally, these patients may have disease-induced frailty, all of which taken together are relevant for risk stratification, that may be heightened by ethnicity.

Public policy can enhance health but should also incorporate ethnic-specific adjustments if it is not to exacerbate differences in health care.^{6,29} Culturally adapted mental health services have been shown to be more effective compared to standard services, when



applied to persons of color.²⁸ Optimal promotion of health equity in minority groups can be achieved only by policies that express a level of cultural competence for the target community.⁷ This requires reasonable adjustments to accommodate individual, family and community ethnic-specific differences in order to promote health equity, especially at a time of this COVID-19 pandemic.¹³ Implementation and messaging of such policies should chime with the values of all sectors of the population. The COVID-19 pandemic requires an understanding of its effects and how it is spread, as well as the acceptance of such intelligence by minority ethnic people in order for the population in this group to comfortably adopt positive measures for personal safety as well as to limit the spread of infection. Adequate knowledge of COVID-19 that is delivered in an understandable and acceptable format to the recipient is a determinant for such behavior.¹² It is through the communication of such knowledge in a way that is culturally competent, that is vital to its acceptance, with the assurance that minority populations may adapt to such positive behaviors as are required in this time of global crisis. Some of the authors have already developed partnerships of joined-up thinking between the National Rheumatoid Arthritis Society and Ambassadors for Ethnicity Health, in the UK, to communicate, disseminate and raise awareness of COVID-19 among the BAME populations.¹³ Similar interventions in other nations may prove to be of value.

Looking into the future with COVID-19, 2021 and beyond, interdisciplinary and international collaborative research projects to investigate the impacts are required as it is difficult to extrapolate the findings to different societies. Furthermore, there is much to be learned from comparing and contrasting between different countries that will better inform the approach individual countries may take as well as our global response. Collaborative datasets, as well as exploiting existing data, are also necessary to better bridge the health inequalities in rheumatology and beyond.

Arumugam Moorthy¹
Shirish Dubey²
Ash Samanta¹
Ade Adebajo³
Amita Aggarwal⁴
Avinash Jain⁵
Nibha Jain⁶
S. Sam Lim⁷
Gail S. Kerr⁸
Kanta Kumar⁹

¹Department of Rheumatology, University Hospitals of Leicester, Leicestershire, UK

²Nuffield Orthopaedic Centre, Oxford University Hospitals NHS Foundation Trust, Headington, UK

³Faculty of Medicine, Dentistry and Health, University of Sheffield, Sheffield, UK

⁴Department of Clinical Immunology and Rheumatology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India

⁵Clinical Immunology and Rheumatology, SMS Medical College and Hospital, Jaipur, India

⁶Department of Rheumatology, Institute of Immunology, Vadodara, India

⁷Department of Medicine, Division of Rheumatology, Emory University, Atlanta, GA, USA

⁸Department of Rheumatology, DC Veterans Affairs Medical Center, Georgetown and Howard University Hospitals, Washington, DC, USA

⁹Institute of Clinical Sciences, University of Birmingham, Birmingham, UK

Correspondence

Dr Kanta Kumar, Institute of Clinical Sciences, University of Birmingham, Birmingham, B15 2TT, UK
Email: k.kumar@bham.ac.uk

ORCID

Amita Aggarwal <https://orcid.org/0000-0002-2187-5186>

Nibha Jain <https://orcid.org/0000-0001-8912-0495>

Kanta Kumar <https://orcid.org/0000-0003-3809-878X>

REFERENCES

1. Watkins J. Preventing a covid-19 pandemic. *BMJ*. 2020;368:m810.
2. World Health Organization. COVID-19 response. <https://www.who.int/news-room/detail/27-04-2020-who-timeline-covid-19>
3. Kirby T. Evidence mounts on the disproportionate effect of COVID-19 on ethnic minorities. *Lancet Respir Med*. 2020; [https://doi.org/10.1016/S2213-2600\(20\)30228-9](https://doi.org/10.1016/S2213-2600(20)30228-9)
4. Webb Hooper M, Napoles AM, Perez-Stable EJ. COVID-19 and racial/ethnic disparities. *JAMA*. 2020; <https://doi.org/10.1001/jama.2020.8598>
5. Pareek M, Bangash MN, Pareek N, et al. Ethnicity and COVID-19: an urgent public health research priority. *Lancet*. 2020;395(10234):1421-1422.
6. Bhala N, Curry G, Martineau AR, Agyemang C, Bhopal R. Sharpening the global focus on ethnicity and race in the time of COVID-19. *Lancet*. 2020;395(10238):1673-1676.
7. Khunti K, Singh AK, Pareek M, Hanif W. Is ethnicity linked to incidence or outcomes of covid-19? *BMJ*. 2020;369:m1548.
8. Kings' Fund Report. Ethnic minority deaths and Covid-19: what are we to do? 2020. <https://www.kingsfund.org.uk/blog/2020/04/ethnic-minority-deaths-covid-19> (accessed May 16, 2020).
9. Office for National Statistics. Office for National Statistics. Coronavirus (COVID-19) related deaths by ethnic group, England. <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronavirus-related-deaths-by-ethnic-group-england-and-wales> (accessed May 14, 2020).
10. Lal P, Kumar A, Kumar S, et al. The dark cloud with a silver lining: Assessing the impact of the SARS COVID-19 pandemic on the global environment. *Sci Total Environ*. 2020;732:139297. <https://doi.org/10.1016/j.scitotenv.2020.139297>
11. GDP of Indian states | Indian states GDP 2019 - StatisticsTimes.com. 2020. <http://statisticstimes.com/economy/gdp-of-indian-states.php> (Accessed 16 May 2020)
12. Clement JM. Knowledge and behaviors toward COVID-19 among U.S. residents during the early days of the pandemic. *JMIR Public Health Surveillance* 2020;6:e19161.



13. Kumar K, Dubey S, Samanta A, Bosworth A, Moorthy A. Covid-19: Ethnicity in Rheumatology. *Rheumatol Oxford*. 2020. (accepted for publication).
14. Dehning J, Zierenberg J, Spitzner FP, et al. Inferring change points in the spread of COVID-19 reveals the effectiveness of interventions. *Science*. 2020;eabb9789. <https://doi.org/10.1126/science.abb9789>
15. Gonzalez LA, Toloza SM, McGwin G Jr, Alarcon GS. Ethnicity in systemic lupus erythematosus (SLE): its influence on susceptibility and outcomes. *Lupus*. 2013;22(12):1214-1224.
16. Samanta A, Roy S, Feehally J, Symmons DPM. The prevalence of diagnosed systemic lupus-erythematosus in Whites and Indian Asian Immigrants in Leicester-City, UK. *Br J Rheumatol*. 1992;31(10):679-682.
17. Samanta A, Samanta J, Johnson M, Brooks N. Rheumatoid arthritis in minority ethnic groups: patterns of disease, clinical and sociocultural features among British South Asians. *Divers Health Soc Care*. 2005;2:99-118.
18. Kumar K, Gordon C, Toescu V, et al. Beliefs about medicines in patients with RA and SLE: a comparison between patients of South Asian and White British origin. *Rheumatology*. 2008;47(5):690-697.
19. Kumar K, Raza K, Nightingale P, et al. Determinants of adherence to disease modifying anti-rheumatic drugs in White British and South Asian patients with rheumatoid arthritis: a cross sectional study. *BMC Musculoskelet Disord*. 2015;16:396.
20. Kumar K, Reehal J, Stack RJ, Adebajo A, Adams JO. Experiences of South Asian patients in early inflammatory arthritis clinic: a qualitative interview study. *Rheumatol Adv Pract*. 2019;3:2.
21. Jain A, Aggarwal A, Adams JO, et al. Work productivity loss among rheumatoid arthritis patients in India: a qualitative study. *Rheumatol Adv Pract*. 2019;3(2):rkz046.
22. Aggarwal NK, Pieh MC, Dixon L, Guarnaccia P, Alegria M, Lewis-Fernandez R. Clinician descriptions of communication strategies to improve treatment engagement by racial/ethnic minorities in mental health services: a systematic review. *Patient Educ Couns*. 2016;99(2):198-209.
23. Mehta B, Pedro S, Ozen G, et al. Serious infection risk in rheumatoid arthritis compared with non-inflammatory rheumatic and musculoskeletal diseases: a US national cohort study. *RMD Open*. 2019;5(1):e000935.
24. Mehta P, McAuley DF, Brown M, Sanchez E, Tattersall RS, Manson JJ. COVID-19: consider cytokine storm syndromes and immunosuppression. *Lancet*. 2020;395(10229):1033-1034.
25. Cavalli G, De Luca G, Campochiaro C, et al. Interleukin-1 blockade with high-dose anakinra in patients with COVID-19, acute respiratory distress syndrome, and hyperinflammation: a retrospective cohort study. *Lancet Rheumatol*. 2020;2(6):e325-e331.
26. Hooper MW, Napoles AM, Perez-Stable EJ. COVID -19 and racial/ethnic disparities. *JAMA*. <https://doi.org/10.1001/jama.2020.8598>
27. Alliance TC-GR. The Global Rheumatology Community's response to the worldwide COVID-19 Pandemic. <https://rheum-covidorg/> (Accessed 2020 May 20)
28. Smith TB, Rodrigez MD, Bernal G. Culture. *J Clin Psychol*. 2011;67(2):166-175.
29. Chiappelli F, Khakshooy A, Greenberg G. CoViD-19 Immunopathology and Immunotherapy. *Bioinformation*. 2020;16(3):219-222.