

## **Differential Effects of COVID-19 by Gender and Ethnicity**

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### **Published version**

GUMBER, Anil and GUMBER, L. (2020). Differential Effects of COVID-19 by Gender and Ethnicity. *BMJ: British Medical Journal*, 369.

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## Differential Effects of COVID-19 by Gender and Ethnicity

Dear Editor,

The updated version of the Intensive Care National Audit and Research Centre (ICNARC) report published on 24<sup>th</sup> April 2020 with 6720 confirmed cases of coronavirus (COVID-19) shows that the condition disproportionately impacts Black, Asian, and Minority Ethnic (BAME) patients (34.3% in intensive care and 34.4% required advanced respiratory support) compared to White Caucasians. Furthermore, a greater proportion of BAME patients died (55.3% vs. 48.4%) in the intensive care thus reflecting a lower survival rate from the pandemic. Global evidence has concluded that the majority of patients who died due to COVID-19 had one or more pre-existing conditions. In the UK context, it is well established that BAME individuals are more likely to have cardiovascular disease, diabetes and other long-term conditions and the onset of disease is significantly earlier (e.g. gets type 2 diabetes in early 40s) compared to their White counterparts.<sup>2</sup> Multiple co-morbidities and a longer duration of these long-term conditions among BAME patients may explain the severity of COVID-19 among confirmed cases. The ICNARC report confirms that higher proportions of BAME COVID-19 patients were on ventilators and also required other organ support including renal.

The much greater area of concern is the gender disparity with a greater occurrence of COVID-19 in men (72% male vs. 28% female). Similar differences were also observed for SARS and MERS (previous coronavirus diseases) during the early 21<sup>st</sup> Century. On the contrary, one finds a gender balance in other respiratory conditions. For example, the ICNARC report has provided comparable cohort data of viral pneumonia cases between 2017 and 2019 where the gender gap was minimal (46% female vs 54% male). The underlying reasons for the gender disparity in COVID-19 cases need to be explored further. Previous research has suggested that the higher smoking rate among men could be a contributory factor. However, a more plausible reason is the differences in immunity levels between men and women. The presence of two X chromosomes in every cell in women naturally strengthens the immunity. A recent article states that: "a number of critical immune genes are located on the X chromosome in particular the gene for a protein called TLR7, which detects single-stranded RNA viruses like the coronavirus. As a result, this protein is expressed at twice the dose on many immune cells in females compared to males, and the immune response to coronavirus is therefore amplified in females"<sup>3</sup>. Another potential explanation could be due to lower levels of hygiene among men. Historically, the frequency and timing of hand washing as well as use of sanitiser is considerably poorer in men. Therefore it is imperative that routine NHS data on COVID-19 is urgently examined to explore gender differences and associated risk factors within each broad category of ethnicity.

The other critical issue is to explore and understand the differences in immunity level as well as underlying diet, nutrition, and exercise factors that are required to raise and maintain immunity levels among BAME groups. Vitamin D deficiencies have been widely reported among the BAME population in the UK. Additionally, BAME individuals particularly those living in deprived areas lack knowledge on the importance of a balanced and healthy diet containing all essential micronutrients that are required to boost immunity and prevent infectious diseases. Understandably, the BAME population in the UK is highly heterogeneous. Hence use of a tool such as the Six G framework<sup>4</sup> can

enable healthcare providers to deliver culturally-appropriate advice and aid in the development of interventions to promote lifestyle behavioural changes (i.e. diet and exercise) to improve immunity level and combat COVID type viruses in the future.

**Competing Interests:** We have no competing interests.

## References

<sup>1</sup> Intensive Care National Audit and Research Centre. *ICNARC report on COVID-19 in critical care 24 April 2020*. <https://www.icnarc.org/Our-Audit/Audits/Cmp/Reports> accessed 25th April 2020.

<sup>2</sup> Bellary S, O'Hare JP, Raymond NT, Gumber A et al. Enhanced diabetes care to patients of south Asian ethnic origin (the United Kingdom Asian Diabetes Study): a cluster randomised controlled trial. *Lancet* 371 (9626):1769-1776. 24 May 2008.

<sup>3</sup> <https://www.newscientist.com/article/2240898-why-are-men-more-likely-to-get-worse-symptoms-and-die-from-covid-19/#ixzz6KiWapGZj>.

<sup>4</sup> Gumber A and Gumber L. Improving Prevention, Monitoring and Management of Diabetes among Ethnic Minorities: Contextualising the Six G's Approach. *BMC Research Notes* (2017) 10(1):774. <https://doi.org/10.1186/s13104-017-3104-9>.