

Covid-19: Possible reasons for the increased prevalence of Olfactory and Gustatory dysfunction observed in European studies

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Dear Editor,

Leurs et al describe the interesting observation that the reported prevalence of olfactory and gustatory symptoms seems to be substantially higher in European COVID-19 cohorts compared to East Asia cohorts. Most of the studies from East Asia report a prevalence of around 4-5%;¹⁻⁴ European studies report a prevalence of 34-79%.⁴⁻⁸ However the authors did not sufficiently explore the possible reasons for this observed discrepancy. I think that it is worth doing so briefly here.

Some have postulated that one possible explanation for this discrepancy is a cultural difference in the epistemology of how patients and medical staff experience or report these symptoms.⁷ Whilst this is indeed possible, I feel that this is unlikely to account for such a striking difference in observed prevalence. There are two alternative and potentially more plausible and interesting explanations that I feel are deserving of more study. The first possibility is informed by the hypothesis that there are differences in ACE2 receptor expression in the nasopharynx of East Asians as compared to European populations.⁹ Increased expression of ACE2 in European populations may contribute to a higher risk of olfactory and gustatory symptoms. The other intriguing possibility is that this emerging symptom amongst European populations is actually related to mutations in the virus itself; mutations which may be resulting in a clinical difference. New genomic analysis shows that the Spike mutation (D614G; a G-to-A base change at position 23,403 in the Wuhan reference strain) is found almost exclusively in Europe¹⁰. This analysis also shows that it is likely to have originated in Europe and has now spread across the continent. If this correlates with the increasing prevalence of olfactory/gustatory dysfunction then the possibility is therefore raised that the European mutation profile represent a clinically distinct strain, associated with a different symptom profile to the reference Wuhan virus. This possibility would also raise further lines of inquiry with regards to tracking the evolution of SARS-CoV-2 virulence and its neuroinvasive potential.

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