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Multiple factors drive the infection rate in the progress of the COVID-19 pandemic

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Although the World Health Organization has declared that the COVID-19 pandemic no longer qualifies as a global public health emergency, it still needs to review the response of society to the COVID-19 pandemic. Previous studies indicated that socio-economic status (SES) was linearly associated with the COVID-19 pandemic. However, this relationship may be more complex due to regional differences. Meanwhile, it needs to analyze the nonlinear impact of multiple factors on the infection rate. In the study, we analyzed the differences in infections among low, lower-middle, upper-middle and high SES group (LSG, LMSG, UMSG, and HSG, respectively), and considered the social and meteorological factors, revealing the effect and mechanisms of SES on infections. The results showed that the relationship between SES and infection rate was inverted U-shaped, especially in the first three phases. The contribution of meteorological factors to the infection rate first increased and then decreased. In the first phase, mask usage was the most important factor affecting the change in infection rate, with the contribution of 23.17%. In the second phase, temperature was the most important factor affecting the change in infection rate. In the third and fourth phases, vaccination was the most important factor. Furthermore, the nonlinear impact of multiple factors related to SES on the infections explains the complex relationship between SES and infections. The study argues for greater attention to countries with medium SES and the need for future targeted measures to cope with infectious diseases.