COVID-19 and social inequalities: a complex and dynamic interaction

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COVID-19, in all its dimensions, including incidence, testing, and severity, is known to be associated with social inequalities.[1–6] Such inequalities are associated with differential exposure to the virus, greater susceptibility to infection, more frequent comorbidities associated with severe outcomes, and disparate access to care.

In *The Lancet Public Health*, Stéphanie Vandentorren and colleagues[7] investigated the association between an area-based deprivation indicator and SARS-CoV-2 incidence, positivity and testing rates in France. To our knowledge, this is the first large-scale study to explore the issue of social inequalities relative to COVID-19 testing and the dynamics of the SARS-CoV-2 pandemic in France. The study benefited from the quality and exhaustiveness of national databases. The authors used data from the Système d'Information de Dépistage Populationnel, which records the results of all SARS-CoV-2 tests in France, for the period May 2020 to April 2021, during which almost 71 million SARS-CoV-2 tests were recorded, including 5 000 972 positive tests. Vandentorren and colleagues showed that SARS-CoV-2 incidence, positivity rates, and testing rates differed in the most socially deprived areas (measured by the European Deprivation Index [EDI]) when compared with the least deprived areas. A clear social gradient was identified, whereby individuals living in the most deprived areas had the highest risk of contracting SARS-CoV-2, but a concomitant lower likelihood of being tested. This social gradient was more pronounced in densely populated areas than in sparsely populated areas.

Vandentorren and colleagues analysed the weekly dynamic of SARS-CoV-2 incidence, positivity rates, and testing rates by deprivation and population density group, which showed that the measures implemented by the French Government to manage the pandemic, especially lockdowns, had a differential impact on these outcomes in the most and the least deprived areas, and that this impact varied according to population density. In less populated areas, during the second lockdown SARS-CoV-2 incidence, positivity rates, and testing rates were lower in the most deprived areas than the least deprived areas. However, during the third lockdown, incidence and testing rates were higher in the most deprived areas, with a similar positivity rate. In densely populated municipalities, while testing rates were similar across deprivation quintiles during the second lockdown, they were lower in the most deprived than less deprived areas areas around the time of the third lockdown.

In this study, some area codes were excluded, therefore the authors compared the distribution of the total number of tests and the number of positive results by age and sex between the missing and included data. The differences, although statistically significant, were small. It would have been interesting to know how comparable the excluded areas were with regard to other socioeconomic variables, although it is unlikely that this issue biased the results. Moreover, the impact of each social variable in the EDI could not be studied, but it could be interesting to explore further. Socioeconomic data were not available at the individual level, therefore, the authors used an ecological measure of deprivation at the area level, precluding a detailed study of the mechanisms at work. Further studies are needed to investigate the complex spatiotemporal interactions suggested by the findings. Additionally, considering that access to COVID-19 vaccine might also be affected by socioeconomic inequalities, it would be of great interest to incorporate vaccination uptake into the analyses.

Vandentorren and colleagues have provided new information regarding the association between social inequalities and health in the context of a major health crisis. Importantly, the study also provided insights with regard to the dynamics involved, and suggest a worsening of the negative influence of socioeconomic inequalities on COVID-19 testing and incidence during the pandemic. Indeed, in densely populated municipalities, the testing rate decreased in the most deprived areas—signalling a deterioration in access to preventive measures. These results might also be associated with an increase in social inequalities resulting from the pandemic itself, since the crisis also increased income inequalities in France.[8] In 2013, the French Government[9] announced their intention to

For more on the **French Public Health Law** see http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000028372809

reduce social inequalities in health as part of the Public Health Law. However, doing so will require sustained and coordinated multisectoral initiatives, many of which have yet to be elaborated on and implemented. These challenges might explain the results described by Vandentorren and colleagues and findings in other national reports,[8] including structural barriers to vaccination. Such studies might be useful for any future strategies to tackle such inequalities.

We declare no competing interests.

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