

## Risk of Sars-CoV-2 infection and disease severity in people at socioeconomic disadvantage in Italy

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### Background:

Evidence accumulated in the past months indicating that COVID-19 affects people at socioeconomic (SE) disadvantage more strongly. This is embodied by the COVID-19 syndemic concept, i.e., the biological, economic, and social interactions between non-communicable diseases and COVID-19 increase a person's susceptibility to infection and worse health outcomes. Here, we explored the relationship among the SE position and the risk of Sars-CoV-2 infection and disease severity in Tuscany and Apulia, two Italian regions, during the 1st(Feb-Jun2020) and 2nd(Sep-Dec2020) epidemic waves.

### Methods:

We included all individuals tested (only for Apulia) and/or resulted positive for SARS-CoV2(for Tuscany and Apulia) and reported to regional surveillance system. We linked surveillance data with the deprivation index (DI)(1-5 scale; DI=5 highest deprivation) of the area of living. We calculated the relative risk (RR) of acquiring Sars-CoV-2, COVID-19-related hospitalization, and death of deprived individuals compared with people in the highest SEP-we adjusted for gender and age.

### Results:

A total of 159507 (82897 F; 76610 M) individuals with prior or current Sars-CoV-2 infection were included in our study, 71320 from Apulia and 88187 from Tuscany. For people aged over 30, and with a DI > 2, the RR of acquiring the infection increased for individuals with higher DI. The RR of being hospitalized and of death, were significantly higher for people over 30 with DI = 5. In Apulia, test positivity rate was comparable across all population groups during the 1stwave, while it increased among individuals with higher DI during the 2ndwave.

### Conclusions:

According to our results, SE disadvantage is associated with an increased risk of acquiring Sars-CoV-2, and to suffer from severe outcomes when infected. Based on available data, diagnostic test access was more equitable during 1stepidemic wave. This study calls for targeted health policies and actions to protect those with the greatest SE vulnerability.

### Key messages:

- Available Italian data, indicate that higher socioeconomic disadvantage is associated with an increased risk of

acquiring Sars-CoV-2, and to suffer from severe outcomes when infected.

- Our study highlights the importance of adopting targeted health policies and action to protect those with the greatest socioeconomic vulnerability and enhance equity.