The role of children and adolescents in the epidemiology of the COVID-19 pandemic in Southwest Germany

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Objectives/Background

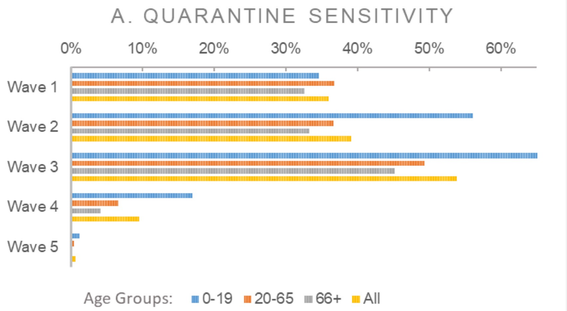
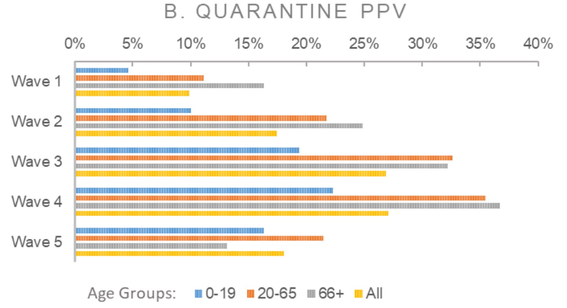
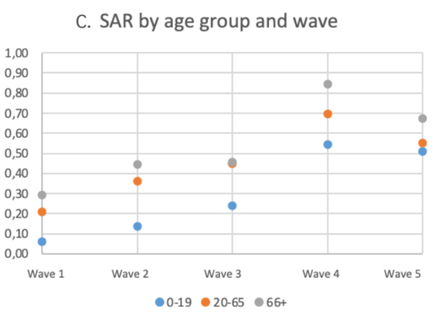
This study investigated the role of children and adolescents (0-19 years) in the epidemiology of the first five COVID-19 pandemic waves in a region in Southwest Germany. It assessed differences between age groups with respect to quarantine, infection, transmission, and fatal outcomes.

Material and Methods

The study analysed routinely collected data by the public health authority of the Rhine-Neckar district, which is also responsible for Heidelberg city. The population was divided into three age groups: children and adolescents (0-19 years), adults (20-65 years), and the elderly population (>65 years). The following events were assessed for each age group and wave of pandemic: quarantine, infection and fatal outcome; relative risks for quarantine, infection and fatal outcome; quarantine sensitivity (quarantined proportion of infected population) and positive predictive value of quarantine (infected proportion of quarantined population); secondary attack risks (infected proportion of contact persons).

Results

Children and adolescents were overrepresented among quarantine events with respect to their proportion of the population. While at the beginning of the pandemic they were underrepresented among infection events, this relation reversed with the emergence of the alpha variant. There were no fatal outcomes in this age group. Quarantine sensitivity was highest in this age group, while the positive predictive value of quarantine was lowest. While transmission from the young population increased over time, it remained lower than that from other age groups.

Discussion/Conclusions

The infection, transmission, and fatal outcomes within the aged 0-19 population were largely in alignment with previously published literature. The quarantine sensitivity and positive predictive value can be used as metrics for the overall effectiveness and efficiency of contact tracing within the context of the COVID-19 pandemic.