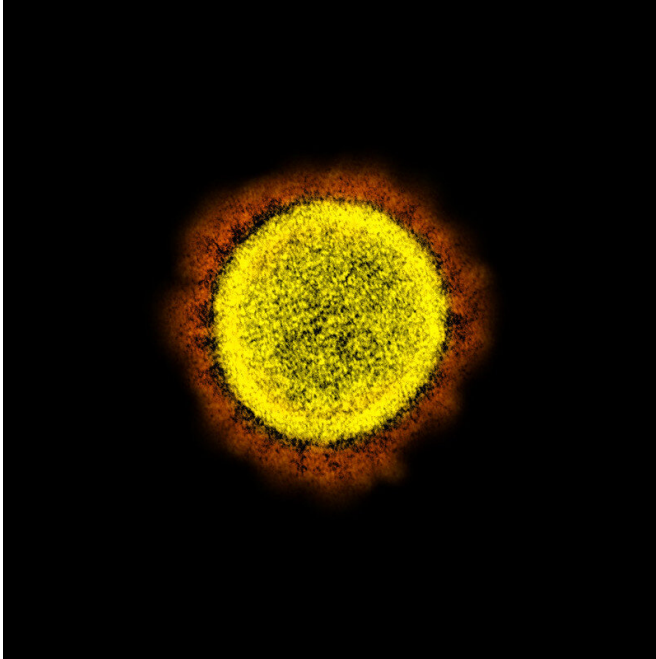


SARS-CoV-2 seroprevalence study in daycare centres in France suggests low rates of infection in very young children

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Novel Coronavirus SARS-CoV-2 Transmission electron micrograph of SARS-CoV-2 virus particles, isolated from a patient. Image captured and color-enhanced at the NIAID Integrated Research Facility (IRF) in Fort Detrick, Maryland. Credit: National Institute of Allergy and Infectious Diseases, NIH

Children aged between 5 months and 4 years attending daycare during lockdown in March to May 2020 in France had low rates of SARS-CoV-2 antibodies in their blood—known as seroprevalence—suggesting that virus infection rates were low in this population.

Research assessing seroprevalence in daycare centres that remained open during the first national lockdown in France, suggests that the rate of SARS-CoV-2 virus infection was low at 3.7%, with positive cases likely infected by an adult in their

household, rather than whilst at daycare. The seroprevalence rate among daycare staff was similar to that of a control group of adults who were not exposed to children or COVID positive patients in a work setting.

This study, which included 327 children aged between 5 months to 4 years old, is the first to estimate seroprevalence in preschool settings and is published in *The Lancet Child & Adolescent Health* journal. Since the study was conducted, a number of SARS-CoV-2 variants have emerged, which are not captured in the data.

SARS-CoV-2 has been shown to infect people of all ages, however, children tend to develop mild, if any symptoms, and very rarely need hospitalisation. The role of very young children as asymptomatic SARS-CoV-2 virus spreaders is still unknown and the risk to the community of having daycare centres open is not clear.

Seroprevalence data is thought to reflect the true rate of infection as it shows the levels of antibodies in the blood, whether or not the individual showed symptoms of COVID-19. This study could therefore provide vital information to policy-makers around daycare closures for very young children during further waves of the SARS-CoV-2 pandemic, although the authors stress that more research in other settings and emerging variants will also be needed.

"Our results suggest that daycare centres are not focus points of SARS-CoV-2 virus infection and that young children are not spreading the virus widely in these environments. These findings should be reassuring for parents and staff at daycare centres, especially given that the children included in the study have parents who are keyworkers and are thought to be at higher risk during the first wave of

the epidemic," says Dr. Camille Aupiais, lead author from Hôpital Jean-Verdier, Paris, France.

COVID-19 has caused over 2 million deaths globally, placing extreme pressures on healthcare systems worldwide. Many countries have closed schools and daycare centres in an effort to stem infection rates. However, these closures have come with an economic cost and raised concerns about the development and wellbeing of children.

During the first French national lockdown in March 17th to May 11th, 2020, most daycare centres and schools were closed with a small number operating at reduced capacity to care for children of critical workers, including healthcare staff and social workers.

Throughout this time, French daycare centres were advised to follow safety protocols which included working with smaller set cohorts of 6-8 children with dedicated staff to each cohort, disinfection of surfaces, and face masks and social distancing measures for staff. Parents were not allowed to enter the daycare centres and were instructed to screen their children for COVID-19 symptoms before sending them in. Children with symptoms were not permitted to attend the daycare centres.

The study included 197 daycare staff (average age 40 years). A staff comparator group of 164 adults (average age 42 years) was comprised of office and lab workers from six hospitals who kept working during the lockdown and were not occupationally exposed to very young children or COVID-19 patients in their work setting.

Data collection took place between June 4th and July 3rd 2020, four to eight weeks after the end of the national lockdown, in daycare centres around the French cities of Paris, Rouen, and Annecy. Blood samples were collected from participants—using finger pricks for children—and tested using a rapid lateral flow test to detect SARS-CoV-2 antibodies.

In all, 14/327 children, 14/197 daycare staff and 9/164 comparator adults were positive for SARS-CoV-2 antibodies. After adjustment for test sensitivity and specificity, these values were 3.7%,

6.8% and 5.0% respectively. Statistically, the seroprevalence rate among daycare staff did not differ significantly from that observed in the comparator group.

The 14 seropositive children came from 13 daycare centres. In the centre with two seropositive cases, the children had attended separate zones of the daycare centre with no mixing, suggesting that there was no child-child transmission in these cases.

Contact with a confirmed adult household case of COVID-19 during the lockdown—but not sibling cases or daycare peer cases—was more frequent in seropositive children than seronegative children. Seropositive children were significantly more likely to have at least one seropositive parent (55% vs 14%).

The 14 seropositive daycare staff came from eight different daycare centres and there were two centres with three seropositive staff members. No difference was found in seroprevalence rates between staff who were exposed (or not) to a child with confirmed COVID-19.

"Our results suggest that young children are more likely to contract COVID-19 at home, rather than at a daycare centre," says Dr. Aupiais. "We suggest that clinical signs of COVID-19 are not the best indicators of infection or for testing very young children and that the main criterion should be a suspected or confirmed case in an adult household member. Further research is needed to fully understand the role of young children in community transmission."

The authors caution that there are limitations to the study and that new variants of SARS-CoV-2 have arisen since the testing period, including the so-called UK, Brazilian, and South African variants, and it is not established whether young [children](#) are more or less susceptible to these newer strains. Furthermore, the daycare centres included in the study were not operating at full capacity during the study period and results may not generalise to centres that are operating normally outside of lockdown.

More information: SARS-CoV-2 transmission among children and staff in daycare centres during a nationwide lockdown in France: a cross-sectional, multicentre, seroprevalence study, *The Lancet Child & Adolescent Health*, DOI: [10.1016/S2352-4642\(21\)00024-9](https://doi.org/10.1016/S2352-4642(21)00024-9) , [www.thelancet.com/journals/lan ...](https://www.thelancet.com/journals/lan...) [\(21\)00024-9/fulltext](https://www.thelancet.com/journals/lan...)

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