

University of Fribourg - Faculty of Science and Medicine

Seroprevalence of SARS-CoV-2 antibodies and associated risk factors
in children less than 6 years of age in the canton of Fribourg,
Switzerland (COVPED study): a population-based cross-sectional
study

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In this study, we assessed the SARS-CoV-2 seroprevalence in children less than 6 years of age in the canton of Fribourg, Switzerland, and identified risk factors associated with seropositivity.

The COVPED study is a population-based cross-sectional study in children less than 6 years of age living in the canton of Fribourg, Switzerland, who presented to a private paediatrician or the paediatric emergency department of the Fribourg Hospital during a 9-week period between January 11 to March 14, 2021. Immunoglobulin G antibodies against SARS-CoV-2 trimeric spike protein were measured in capillary blood samples using an in-house Luminex assay. A mean fluorescence intensity ratio of above 6 was considered as positive. Metadata was collected through electronic questionnaires. Logistic regression analysis was performed to assess the risk of seropositivity and associated factors.

A total of 871 children, with a median age of 33 months (range 6 days to 5 years 11 months) were included; 412 (47%) were female. Overall, 180 (21%, 95% confidence interval (95% CI) 18-24%) children were seropositive. Age as continuous variable was not associated with seropositivity risk, apart from a higher rate in children less than 3 months of age. Univariable analysis showed that female sex was associated with a lower seropositivity risk (unadjusted odds ratio (OR) 0.69, 95% CI 0.49-0.96, $p = 0.03$). Day-care attendance was also associated with a lower seropositivity risk (OR 0.67, 95% CI 0.47-0.95, $p = 0.03$), while all other childcare arrangements were not associated with seropositivity. No association was found between the number of children and adults present in extra-familial care and seropositivity. Multivariable analysis identified the number of household members above the age of 12 years being positive for SARS-CoV-2 as the main risk factor for seropositivity in children (adjusted odds ratio (aOR) 7.80, 95% CI 4.65-13.07, $p < 0.001$ for 1 household member, aOR 22.07, 95% CI 13.49-36.11, $p < 0.001$ for 2 household members and aOR 32.20, 95% CI 9.30-111.55, $p < 0.001$ for 3 or more household members).

The number of household members tested positive for SARS-CoV-2 (PCR test) is the main exposure risk to seropositivity for children less than 6 years of age. But the family size is not associated with an increased risk of infection. In young children, extra-familial care does not increase the risk of becoming SARS-CoV-2 seropositive, neither does the number of contacts present in extra-familial care.

Jury:

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