The Risk of Underestimating the Contribution of Children to Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Pandemic

To the Editor—We have read with interest the article by Soriano-Arandes et al about the contribution of children to household transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. The role of schools and school-aged children in SARS-CoV-2 transmission remains largely uncertain and is the source of intense debates. The negative physical and mental health and educational impact of school closures on children and their parents should not be underrated. Unfortunately, schools can be an excellent setting for the spread of respiratory infections through close contacts in often poorly ventilated environments. Determining the role of children in transmission is highly relevant to the development of public health strategies, including vaccination, aimed at containing spread within communities.

Overall, data mostly suggested a small contribution of children to SARS-CoV-2 transmission [2, 3]. In a recent report, the European Centre for Disease Prevention and Control (ECDC) indicated that younger children appear to be less susceptible to infection and, when infected, less often lead to onward transmission compared to older children and adults [4]. The conclusions of the article by Soriano-Arandes et al go along the same direction. The authors have performed an observational study during summer and school periods in which they analyzed viral transmission dynamics in coronavirus disease 2019 (COVID-19) patients [1]. A pediatric index case was established when a child was the first individual infected within a household. The study included more than 1000 COVID-19 participants aged <16 years old, which is an undeniable strength of the study. Half of them were asymptomatic. They observed that 72.7% of children were cases secondary to an adult case, whereas only 7.7% of children were household index cases. Based on those results, they concluded that children do not significantly contribute to household clusters and are unlikely to be key drivers of the pandemic [1].

Nevertheless, the design of the study does not allow drawing such conclusions. We believe that the study is biased toward an underestimation of children's contribution to the pandemic. Children are often asymptomatic or only poorly symptomatic [5, 6]. Only a marginal proportion of children are recognized as infected by testing at the time of symptom onset. Han et al estimated that 93% of children would be missed using a testing approach targeting symptomatic cases alone [7, 8]. Children are more likely to go undetected and may therefore contribute to viral circulation within their household [1]. Asymptomatic infected children could later be tested as a part of contact tracing and considered as secondary to an adult case and not as a driver of SARS-CoV-2 infection.

Studies assessing the role of children in SARS-CoV-2 transmission should thus include systematic SARS-CoV-2 screening in both children and adults from the same houshold. Screening pace has to be sufficient to identify the index case. Ideally, building transmission trees should additionally rely on sequencing data. We acknowledge that setting up such studies is challenging when great numbers of individuals are included. Smaller studies including an unbiased screening process could sometimes provide a more accurate indication of epidemiological reality.

Notes

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Reply to Darcis et al

To the Editor—We thank Darcis et al [1] for their comments on our recent article about household severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission and the role of the children [2], which has been a matter of debate since the beginning of the coronavirus disease 2019 pandemic.