

Renewed absence of SARS-CoV-2 infections in the day care context in

Berlin, January 2021

Welmoed van Loon

Institute of Tropical Medicine and International Health, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Franziska Hommes

Institute of Tropical Medicine and International Health, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Stefanie Theuring

Institute of Tropical Medicine and International Health, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Annkathrin von der Haar

Institute of Tropical Medicine and International Health, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Jennifer Körner

Institute of Tropical Medicine and International Health, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Michael Schmidt

German Red Cross Blood Transfusion Service, Frankfurt, Germany

Christof von Kalle

Clinical Study Center, Berlin, Germany, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Marcus A. Mall

Department of Pediatric Pulmonology, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Joachim Seybold

Medical Directorate, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Tobias Kurth

Institute of Public Health, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Frank P. Mockenhaupt

Institute of Tropical Medicine and International Health, Charité-Universitätsmedizin Berlin, corporate member of Freie Universität Berlin, Humboldt-Universität zu Berlin, and Berlin Institute of Health, Berlin, Germany

Corresponding author: Welmoed van Loon, Campus Virchow-Klinikum, Augustenburger Platz 1, 13353 Berlin, Tel.: +49 (0)30 450 565764, welmoed.van-loon@charite.de

Dear Editor,

Hoehl *et al.* [1] report the absence of SARS-CoV-2 infections among 859 day care children in Hesse, Germany, who were weekly screened over a 12-weeks-period in summer 2020 by parentally conducted buccal mucosal and anal swabs. Two day care staff members tested positive. In that period, the regional community transmission was low (weekly incidence, 0-66/100,000). We would like to complement these findings with data from kindergarten children, staff, and household members obtained during higher community transmission in January 2021 in metropolitan Berlin.

Germany experienced a strong second COVID-19 wave, which in Berlin started in early October 2020, and peaked between mid-November and mid-December 2020. Between 17 and 23 January 2021, health authorities reported a weekly incidence of 110/100.000 [2]. In this week, we conducted the second round of a longitudinal study in 12 randomly selected kindergartens across Berlin including 156 kindergarten children, 80 staff, and 488 household members of children and staff. The first round had taken place in September 2020 [3]. Because of entry restrictions to these facilities in January 2021 and only partial attendance, we sent and re-collected self-swabbing kits with illustrated instructions (CoronaOne, Germany) to all study participants. Swabs (Nerbe Plus, Germany) were self-collected from oropharynx and both nostrils, and parents swabbed their children accordingly. SARS-CoV-2 infection was determined by RT-PCR including human *RNase P* gene co-amplification (GFE-Blut, Frankfurt, Germany). History data were obtained by electronic questionnaires.

At the January assessment, 57.9% (70/121) of children and 98.5% (65/66) of staff had visited their kindergarten at least once during the preceding two weeks (median, 8 days [range, 0-11], and 10 days [1-14], respectively). 149 children (median age, 5 years [range, 2-8]), 74 staff members (45 years [19-79]), and 472 household members (36 years [1-91]) provided a swab. Mostly cold-like symptoms were reported for 11.6% (17/147), 55.4% (41/74), and 24.9% (112/449) of children, staff, and household members on the day of sample collection. All tested negative for SARS-CoV-2.

At two time points, our entire cohort tested negative for SARS-CoV-2, in September 2020 [3] and in January 2021. As a limitation, our participants might not be representative for the children and adults

connected to the >2,600 kindergartens in Berlin. Nevertheless, repeated absence of SARS-CoV-2 infection four months apart, at weekly community incidences of 38 and 110/100,000, together with the findings of Hoehl *et al.*[1] support our initial interpretation that kindergartens are not silent transmission reservoirs. Likewise, colleagues in Munich did not identify any kindergarten infections by weekly screening in summer and autumn 2020 [4]. This does not exclude the occurrence of outbreaks in such facilities, as reported elsewhere [5–7], and as seen in one of our studied kindergartens in November 2020. So far, health authorities were capable to detect and control these within reasonable time. This may possibly change with the emergence of more transmissible viral mutants. In the current situation, the manageable risk of SARS-CoV-2 infection associated with kindergarten attendance must be weighed very carefully against the manifold health and social risks posed by closed facilities [8,9].

Accepted Manuscript

NOTES

Author contributions

FH, ST, TK, JS, and FPM designed the study. CvK supervised logistics. MS did laboratory examinations. WvL was responsible for analysis. WvL and FPM wrote the manuscript. All authors participated in drafting the article or revising it critically for intellectual content, and approved the final version.

Acknowledgments

We thank the children, daycare staff and families for participation, and Charité – Universitätsmedizin Berlin and the Senate of Berlin for support.

Funding

This work was supported by the Senate of Berlin.

Potential conflicts of interest

TK states to have received outside of the submitted work personal fees from Eli Lilly, Newsenselab, Total and BMJ. MS states to have a patent on detection of SARS-CoV-2 in a plurality of biological samples pending to 1649P102EP. All other authors declare they have no conflict of interests. All authors have submitted the ICMJE Form for Disclosure of Potential Conflicts of Interest.

References

1. Hoehl S, Kreutzer E, Schenk B, et al. Longitudinal testing for respiratory and gastrointestinal shedding of SARS-CoV-2 in day care centres in Hesse, Germany. *Clin Infect Dis*, **2021**; : ciaa1912.
2. Robert Koch Institute. Coronavirus Disease 2019 (COVID-19) Daily Situation Report of the Robert Koch Institute 24.01.2021. 2021. Available at: https://www.rki.de/DE/Content/InfAZ/N/Neuartiges_Coronavirus/Situationsberichte/Jan_2021/2021-01-24-en.pdf?__blob=publicationFile. Accessed 16 February 2021.
3. Thielecke M, Theuring S, van Loon W, et al. SARS-CoV-2 infections in kindergartens and associated households at the start of the second wave in Berlin, Germany – a cross sectional study. medRxiv 2020.12.08.20245910 [Preprint]. 9 December, 2020 [cited 2021 Feb 16]. Available from: <https://doi.org/10.1101/2020.12.08.20245910>.
4. Hoch M, Vogel S, Kolberg L, et al. Weekly SARS-CoV-2 sentinel in primary schools, kindergartens and nurseries, June to November 2020, Germany. medRxiv 2021.01.22.21249971 [Preprint]. 26 January, 2021 [cited 2021 Feb 16]. Available from: <https://doi.org/10.1101/2021.01.22.21249971>.
5. Okarska-Napierała M, Mańdziuk J, Kuchar E. SARS-CoV-2 Cluster in Nursery, Poland. *Emerg Infect Dis*, **2021**; 27: 10.3201/eid2701.203849.
6. Ehrhardt J, Ekinci A, Krehl H, et al. Transmission of SARS-CoV-2 in children aged 0 to 19 years in childcare facilities and schools after their reopening in May 2020, Baden-Württemberg, Germany. *Eurosurveillance*, **2020**; 25: 2001587.
7. Ismail SA, Saliba V, Lopez Bernal J, Ramsay ME, Ladhani SN. SARS-CoV-2 infection and transmission in educational settings: a prospective, cross-sectional analysis of infection clusters and outbreaks in England. *Lancet Infect Dis*, **2020**; : S1473-3099(20)30882–3.

8. López-Bueno R, López-Sánchez GF, Casajús JA, Calatayud J, Tully MA, Smith L. Potential health-related behaviors for pre-school and school-aged children during COVID-19 lockdown: A narrative review. *Prev Med (Baltim)*, **2021**; 143: 143:106349.
9. Hupkau C, Petrongolo B. Work, care and gender during the Covid-19 Crisis. 2020. Available at: <https://cep.lse.ac.uk/pubs/download/cepcovid-19-002.pdf>. Accessed 16 February 2021.

Accepted Manuscript