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Brief report

Daily use of public transportation and incidence of symptomatic COVID-19 among healthcare workers during the peak of a pandemic wave in Zurich, Switzerland

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ABSTRACT

Use of public transportation could be associated with an increased risk for developing COVID-19. We investigated 376 COVID-19-compatible episodes among our healthcare workers (HCWs), of whom 225 (60%) reported that they used public transportation. In multivariate analyses, HCWs using public transportation had no greater incidence of COVID-19 than those continuously using a private transportation.

During this COVID-19 pandemic, the occurrence of infection clusters among healthcare workers (HCWs) is subject of ongoing research. Taking public transportation could be thought of as increasing someone’s risk for COVID-19. To explore this issue, we investigated whether the occurrence of COVID-19 among HCWs at our medical center might be related to the daily use of public transportation.

METHODS

The Balgrist University Hospital is a tertiary center for orthopedic surgery in Zurich. It has approximately 1250 employees. We routinely assess the history of public transportation use by our HCWs during a clinical investigation for COVID-19-compatible symptoms. For this study, we focused on the 2nd pandemic wave of COVID-19 that occurred from 1 October 2020 to 31 December 2020. This period, defined in a prior publication, had the highest rate of spread of the infection in Central Europe. We defined COVID-19 by the presence of compatible symptoms and confirmation by PCR testing. We excluded both asymptomatic carriers of SARS-CoV-2 and HCWs identified by epidemiological linking. Our primary outcome of interest was the risk for COVID-19 in relation to daily use of public transportation, that is, travel by tramway, bus, or train. Typically, our HCWs use such public transportation for approximately 40 minutes per day, but may require a change in types of vehicles. We used descriptive statistics. A chi-square test compared COVID-19 in both those that use and don’t use public transportation (Table 1). A multivariate logistic regression with the outcome “COVID-19” adjusted for the following variables: sex, age, profession, public transport use, individual exposition to people with respiratory symptoms, localization and duration of that exposition, and the HCWs’ opinion concerning his/her infection source (Table 2). Members of the Infection Control Team (SL and IU) assessed the source by performing interviews during 5-15 minutes; and repeated them, if the source remained unclear.

RESULTS

We assessed 376 symptomatic COVID-19 episodes among 337 different HCWs (101 males; median age 37 years [range, 16-63 y]; 11

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Little is known regarding the presumably enhanced risk of acquiring COVID-19 attributed to using public transportation. While there are reports with mathematical modeling, epidemiological surveys based on real-life data are lacking. Hu et al. quantified the risk of COVID-19 infection on long-distance train passengers in China from 2,334 index patients and 72,093 close contacts and found an average attack rate of only 0.32.5,6 Luo et al. examined the rate of COVID-19 infection associated with daily use of public transport in China, on which the passenger can only be made with travel on vehicle such as airplanes or long-distance trains, on which the passenger's seat is recorded electronically. Our experience-based evaluation found no association of acquiring COVID-19 infection associated with daily use of public transportation. This study, however, has a number of major limitations. First, it is a retrospective analysis with mostly academic interest. Second, we performed testing only on those with COVID-19-compatible symptoms, not asymptomatic HCWs. With the 376 episodes investigated, we cannot be sure of the risk strata associated with the various types of transport types used by our HCWs, or the duration of their travel. In Zurich, passengers on public transports stand and frequently change their locations within the vehicle. A proper analysis can only be made with travel on vehicle such as airplanes or long-distance trains, on which the passenger's seat is recorded electronically. Our experience concerning HCWs in Zurich cannot be generalized for various reasons. Knowledge about preventative methods to reduce the risk of COVID-19 infection is likely greater among HCWs than in the general population. Furthermore, Zurich is less crowded than megacities in other (often resource-poor) settings in the world. In addition, our observation of a lack of a significant link between public transit usage and acquiring COVID-19 infection may be related to the concomitant mask mandate in place at the time.

**CONCLUSION**

While daily use of public transportation facilities could theoretically be a risk for acquiring COVID-19 infection, there are no compelling data supporting this widespread presumption. In our hospital, HCWs who regularly used public transportation did not report a rate of symptomatic COVID-19 disease different from those who used private transportation. For this investigation we selected the time period with the most intense wave of COVID-19 in Zurich (winter 2020/2021), during which there was a mask mandate during public transport in effect.

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