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Letter to the Editor

Out-of-hospital cardiac arrest incidence during COVID-19 pandemic in Southern Germany

To the editor:

In December 2019, the new severe acute respiratory syndrome coronavirus 2 (COVID-19) emerged in China and has rapidly spread worldwide affecting the global population in a dramatic manner.¹ Reports from high prevalence regions in different countries

suggested an excess in mortality rates associated with a significant increase in of out-of-hospital cardiac arrest (OHCA) incidences during COVID-19 pandemic.^{2,3} It was the aim of the following study to assess the incidence of OHCA admissions in a strongly COVID-

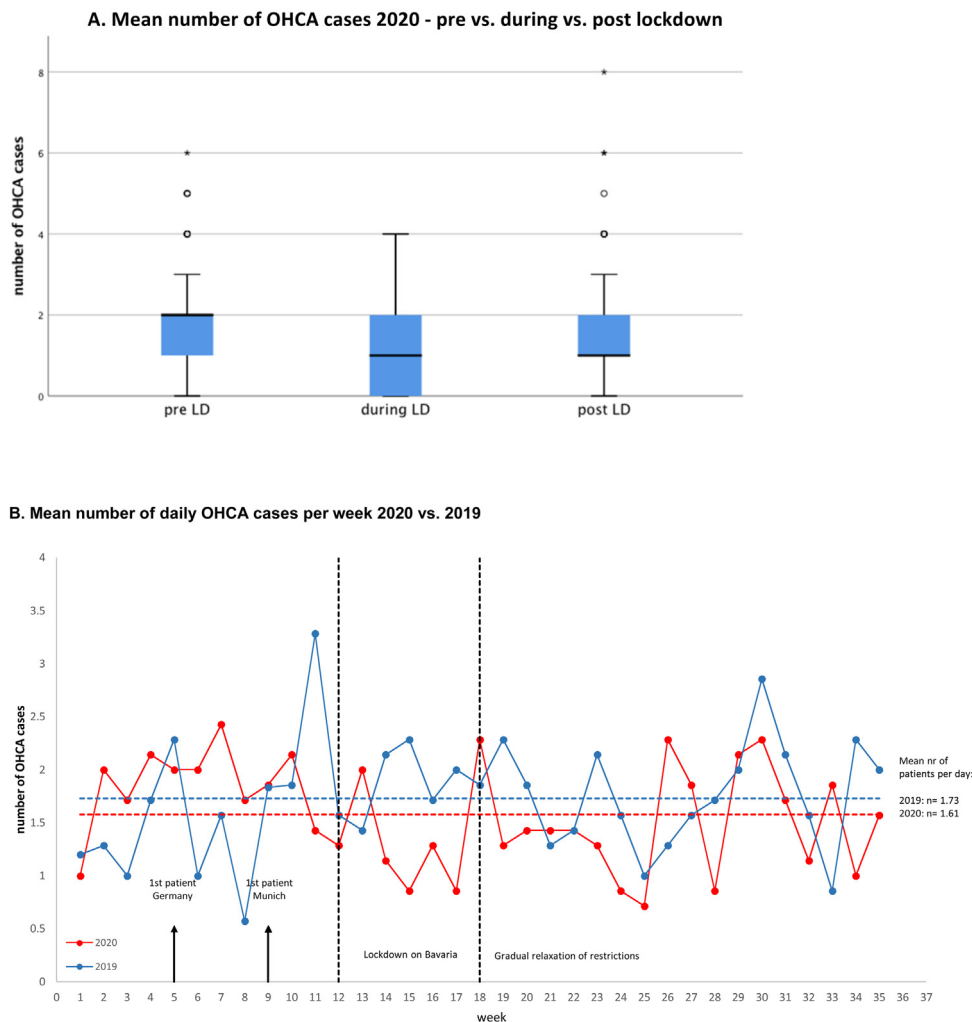


Fig. 1 – A. Mean number of OHCA cases 2020 — pre vs. during vs. post lockdown. B. Mean number of OHCA cases per week 2020 vs. 2019.

19 affected urban German region (Munich and its suburbs) during the pandemic. For this descriptive epidemiological study, the data from IVENA (IVENA eHealth, mainisIT, Frankfurt, Germany), a web-based platform used by Munich's rescue coordination center and the hospitals providing emergency care to coordinate the distribution of patients in Munich's rescue service area were analyzed. The retrospectively assessed study periods were before, during, and after COVID-19 lockdown from January to August 2020 as well as three control periods from January to August of the years 2017–2019. The mean occurrence of daily OHCA was analyzed (1) within 2020 comparing pre vs. during vs. post lockdown using Kruskal–Wallis test and (2) in comparison to reference periods using Mann–Whitney *U* test (2020 vs. 2019).

Stratified analyses of the year 2020 showed a significant decrease in the number of OHCA pre vs. during lockdown (pre LD: 1.88, during LD: $p=0.010$, Fig. 1A). Although the numbers slightly decrease after the relaxation of the restrictions, they still remained lower than before the implementation (pre LD: 1.88, post LD: 1.57 $p=0.078$). Comparing the overall numbers of OHCA 2020 with 2019 no significant difference was observed (2020: 1.61, 2019 1.73; $p=0.272$, Fig. 1B). Results remained non-significant when stratifying for pre/during/post lockdown. The observation of a non-significant, yet noticeable, decrease in the daily number of OHCA remains consistent comparing the overall means of OHCA between 2020 and 2019/2018/2017 (2020: 1.61, 2019: 1.73, 2018: 1.72, 2017: 1.70; $p=0.714$).

Our results on OHCA admission incidences during COVID-19 pandemic are in line with recent data from a low prevalence region in the U.S. where the overall OHCA cases during pandemic did not increase significantly.⁴ However, several international studies have seen a dramatic increase in OHCA incidences. This raises the question how these conflictive results may be explained. First, all these reports came from highly COVID-19 affected regions with overwhelmed health care systems in Italy, France, UK and the U.S.⁵ In this regard, Data from the Lombardia region in Italy suggest a direct link between COVID-19 infection and cardiac arrest incidence.⁵ Second, increased OHCA incidences in highly affected regions are possibly caused by a reduction in patients seeking care for urgent medical conditions, because of the fear of being infected in the hospital.⁵

In summary, differences in OHCA incidences between different regions worldwide might reflect both efficacy of the local health-care systems and population health. Further studies are warranted further investigating associations between OHCA and Covid-19.

Conflict of interest statement

The authors declare they have no conflict of interest.

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Received 21 October 2020

<http://dx.doi.org/10.1016/j.resuscitation.2020.10.034>

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