IMPACT OF CORONAVIRUS DISEASE 2019 ON THE OUT-OF-HOSPITAL CARDIAC ARREST SURVIVAL RATE: A SYSTEMATIC REVIEW WITH META-ANALYSIS

Magdalen J. Borkowska, Milosz J. Jaguszewski, Mariusz Koda, Aleksandra Gasecka, Agnieszka Szarpak, Natasza Gilis-Malinowska, Lukasz Szarpak, Richard Boyer, Krzysztof J. Filipiak, Jacek Smereka

Supplementary File

Content:

Table S1. Methodology characteristics of included studies.

Study	Inclusion criteria	Exclusion criteria	Primary outcome(s)	Findings
Baert et al. 2020	All medical OHCA according to the Utstein template.	Physical indication of death, patients with a known Do Not Attempt Resuscitation (DNAR) order, end of life patients, and traumatic drowning, overdose, asphyxia (external causes) and electrocution OHCA.	the determinants of resuscitation undertaken by bystanders (CPR initiation, type of CPR, use of a defibrillator), secondly, the description of BLS made by the first aid providers (timing, use of ventilation and defibrillator), and lastly, ALS details performed by the MMT (timing, initiation of ALS, administration of epinephrine and tracheal intubation). The other endpoints were return of spontaneous circulation (ROSC) and the survival 30 days after OHCA or at hospital discharge (D30 survival).	During the COVID-19 period, we observed a decrease in CPR initiation regardless of whether patients were suspected of SARS-CoV-2 infection or not. In the current atmosphere, it is important to communicate good resuscitation practices to avoid drastic and lasting reductions in survival rates after an OHCA.
Baldi et al. 2020	All the OHCAs that occurred in these four Provinces in the southern part of the Lombardy Region, in northern Italy, in the first 100 days of epidemic following the first documented case in the Lombardy Region (February 21st , 2020 to May 30th , 2020) and those of the same time frame in 2019 (February 21st , 2019 to May 31st , 2019, to account for the leap year).	NS	NS	Compared to 2019, during the 2020 COVID-19 outbreak we observed a lower attitude of laypeople to start CPR, while resuscitation attempts by BLS and ALS staff were not influenced by suspected/confirmed infection, even at univariable analysis.
Cho et al. 2020	Patients who were aged 18 years or older with OHCA of presumed medical etiology	Patients who did not undergo resuscitative attempts and cases in which cardiac arrest	The treatment and survival outcomes (including prehospital return of spontaneous circulation and neurologic	Responses to the COVID-19 pandemic included changes to current PPE strategies and introduction of isolated resuscitation units; the latter

	and who used the EMS system in Daegu.	occurred in a primary care clinic or long-term care hospital.	outcome at discharge) after cardiac arrest.	intervention reduced the number of unexpected closures and quarantines of emergency resources early on during the COVID-19 outbreak. Given the possibility of future outbreaks, we need to have revised resuscitation strategies and the capacity to commandeer emergency resources for OHCA patients.
Fothergill et al. 2021	All OHCA patients who, during the study periods, received an EMS response from LAS (irrespective of whether a resuscitation attempt was made).	Patients who were successfully resuscitated prior to EMS arrival and so did not receive resuscitation from clinicians.	Survival at 30 days post-arrest.	During the first wave of the COVID-19 pandemic in London, we saw a dramatic rise in the incidence of OHCA, accompanied by a significant reduction in survival. The pattern of increased incidence and mortality closely reflected the rise in confirmed COVID-19 infections in the city.
Sultanian et al. 2021	All cases of OHCA and IHCA registered in the SRCR from 1 January to 20 July 2020.	NS	30-day mortality.	During the pandemic phase, COVID-19 was involved in at least 10% of all OHCAs and 16% of IHCAs, and, among COVID-19 cases, 30-day mortality was increased 3.4-fold in OHCA and 2.3-fold in IHCA.

Legend: ALS = Advanced Life Support; BLS = Basic Life Support; DNAR = Do Not Attempt Resuscitation; NS = Not specified; OHCA = Out-of-hospital cardiac arrest

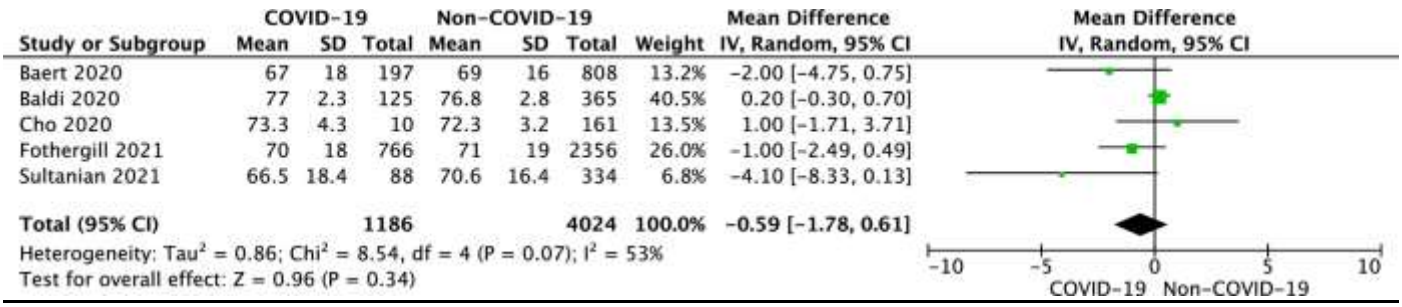

Figure S1. Forest plot of patients age in COVID-19 vs. not COVID-19 group. The center of each square represents the weighted mean differences for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

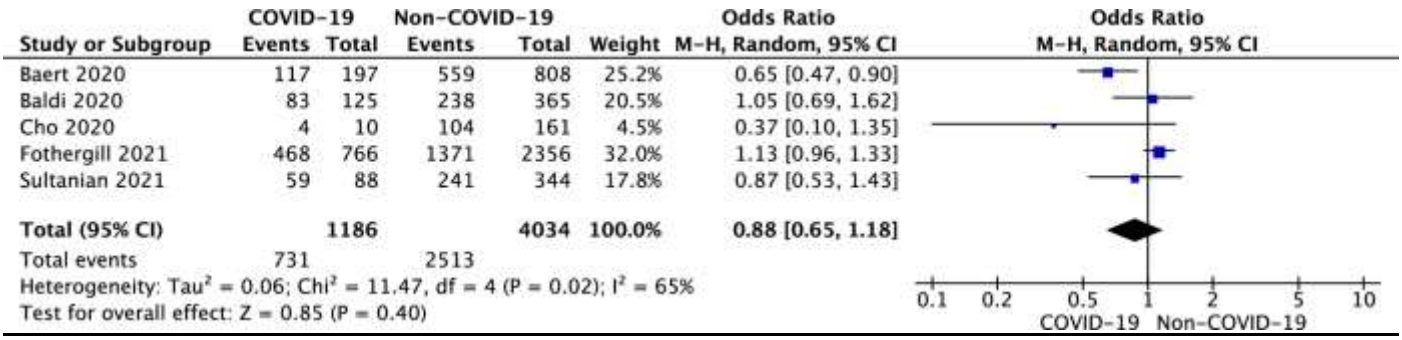

Figure S2. Forest plot of patients' sex (male) in COVID-19 vs. not COVID-19 group. The center of each square represents the weighted odds ratios for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

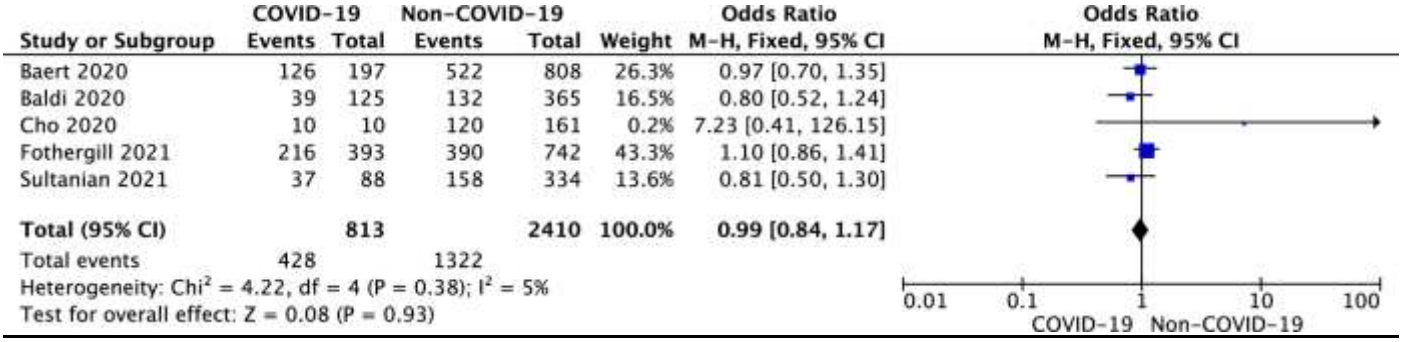

Figure S3. Forest plot of bystander witnessed in COVID-19 vs. not COVID-19 group. The center of each square represents the weighted odds ratios for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

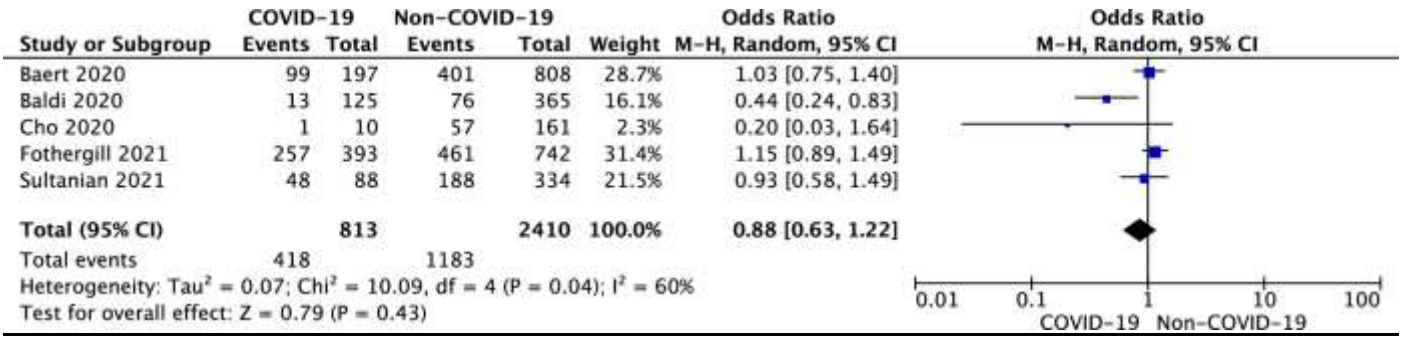

Figure S4. Forest plot of bystander cardiopulmonary resuscitation in COVID-19 vs. not COVID-19 group. The center of each square represents the weighted odds ratios for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

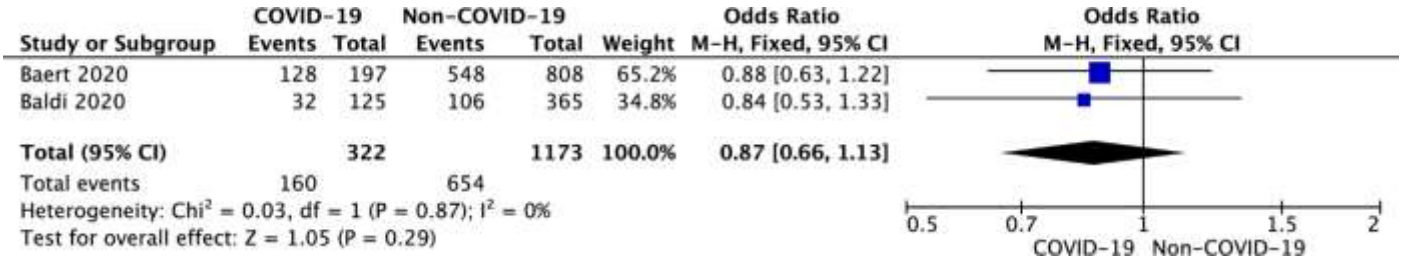

Figure S5. Forest plot of advanced life support implementation in COVID-19 vs. not COVID-19 group. The center of each square represents the weighted odds ratios for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

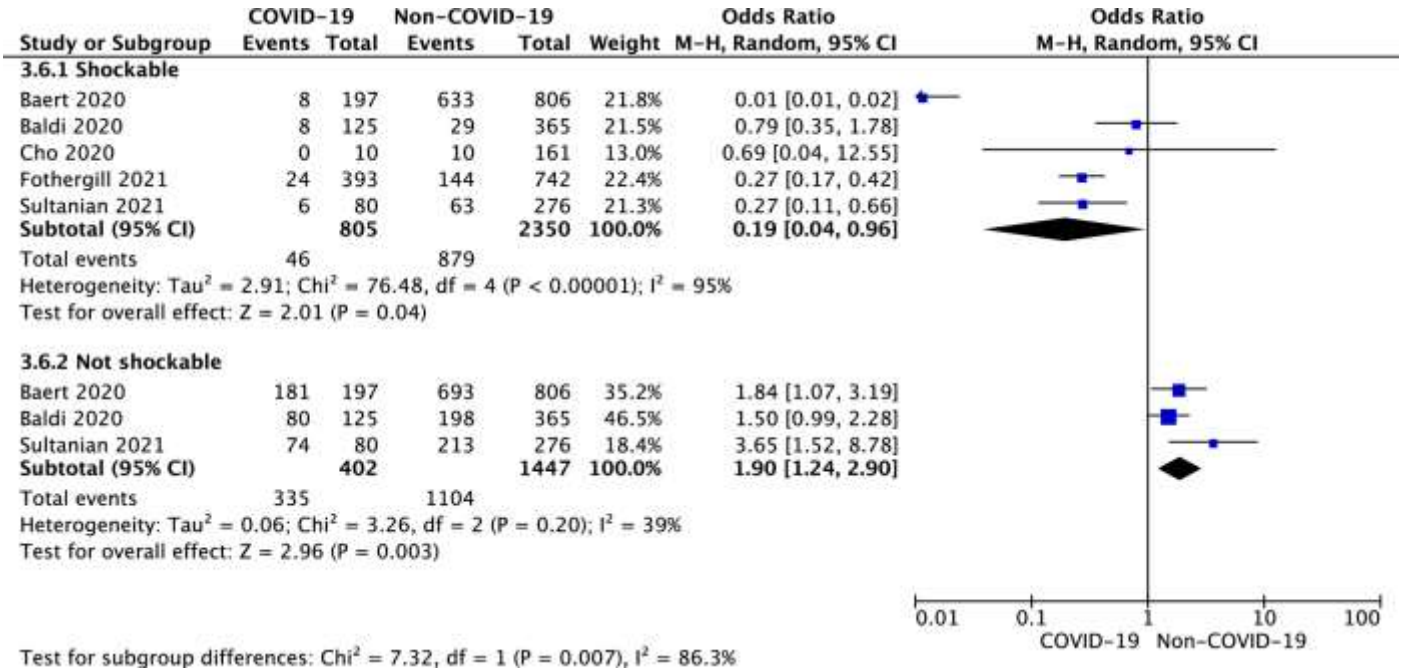

Figure S6. Forest plot of first recorded cardiac rhythm in COVID-19 vs. not COVID-19 group. The center of each square represents the weighted odds ratios for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.

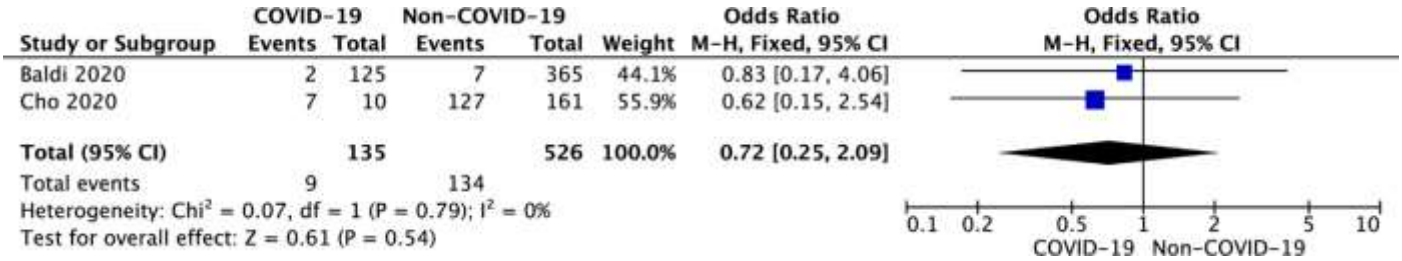

Figure S7. Forest plot of mechanical chest compression devices application in COVID-19 vs. not COVID-19 group. The center of each square represents the weighted odds ratios for individual trials, and the corresponding horizontal line stands for a 95% confidence interval. The diamonds represent pooled results.