

Author Response: Risk Factors for Mortality after Out-of-hospital Resuscitation are More Diverse than Assumed

Darpanarayan Hazra¹, Amal Al-Mandhari²

Keywords: Cardiopulmonary resuscitation, Mortality, Out-of-hospital cardiac arrest, Survival to hospital discharge.
Indian Journal of Critical Care Medicine (2025); 10.5005/jp-journals-10071-24878

We extend our sincere gratitude to Dr Josef Finsterer et al., for their thoughtful comments and critical discussion.¹ The points raised will undoubtedly aid future readers in gaining a deeper understanding of our research.²

- *Ensuring the indication for cardiopulmonary resuscitation (CPR):* Our study, conducted in two large academic hospitals in the Sultanate of Oman, focused on the outcomes of out-of-hospital cardiac arrest (OHCA) in the emergency department (ED) and hospital settings. However, as correctly noted, the cause of OHCA in discharged patients was not included as a variable, which is indeed a limitation of our study. As suggested in the letter to editor, we aim to conduct a prospective study to assess the profiles of discharged patients in greater detail.
- *Resuscitation of patients:* We agree with the point about how patients were managed. In our study, all patients brought to the ED were treated following the most recent advanced cardiovascular life support (ACLS) protocol. The resuscitation team included a senior ED physician as the team leader, with designated roles for managing the airway, administering CPR, operating the defibrillator, administering drugs, and recording events. Our team primarily consisted of trained ED doctors and nurses. Additional ED personnel joined to assist as needed, depending on the workload and demands of the department. Patients arriving from the field were initially managed by emergency medical services (EMS) personnel trained in both basic life support and ACLS protocols. In some cases, CPR was initiated by laypersons before the arrival of EMS personnel. However, due to the retrospective nature of our study, these prehospital factors could not be fully accounted for.
- *Routine autopsies:* We concur that routine autopsies were not performed except in specific circumstances as decided by a medical and forensic panel. This represents another limitation of our study.
- *Concomitant medications:* As rightly pointed out, concomitant medication use was not included in our assessment. This omission is due to the retrospective nature of the study, as many patients were under follow-up at other medical centers and their medication histories were either undocumented or unavailable. Addressing this limitation would require a prospective study design, which we propose as a future research endeavor.
- *Latency between OHCA, resuscitation, and ED arrival:* We acknowledge that the time intervals between OHCA and the initiation of resuscitation, as well as the latency between resuscitation and ED arrival, were not measured. These variables

^{1,2}Department of Emergency Medicine, Sultan Qaboos University Hospital, Muscat, Sultanate of Oman

Corresponding Author: Amal Al-Mandhari, Department of Emergency Medicine, Sultan Qaboos University Hospital, Muscat, Sultanate of Oman, Phone: +91 96899346343, e-mail: amal10@squ.edu.om

How to cite this article: Hazra D, Al-Mandhari A. Author Response: Risk Factors for Mortality after Out-of-hospital Resuscitation are More Diverse than Assumed. *Indian J Crit Care Med* 2025;29(1):94.

Source of support: Nil

Conflict of interest: None

could not be included due to the retrospective nature of the study. However, we recognize their importance and plan to address them in future research through a prospective approach.

- *Achievement of return of spontaneous circulation (ROSC) in the ED:* Regarding the observation about the 178 patients achieving ROSC in the ED, these patients arrived with no pulse and ECG findings indicative of asystole, pulseless electrical activity (PEA), ventricular fibrillation (VF), and pulseless ventricular tachycardia (VT). Resuscitation efforts in the ED resulted in ROSC in these cases, and they were included in the analysis.

In conclusion, we deeply appreciate the insightful comments, which have highlighted areas for improvement and further exploration. These comments have encouraged us to design a prospective study that incorporates these variables to provide even more robust and meaningful research outcomes.

ORCID

Darpanarayan Hazra  <https://orcid.org/0000-0002-5941-0587>

Amal Al-Mandhari  <https://orcid.org/0000-0001-7045-0291>

REFERENCES

1. Finsterer J, Scorza CA, Scorza FA, Fiorini AC. Risk factors for mortality after out-of-hospital resuscitation are more diverse than assumed. *Indian J Crit Care Med* 2024;xx(x):xx-xx. DOI: 10.5005/jp-journals-10071-24872.
2. Al-Habsi T, Al-Mandhari A, Hazra D, Al-Badri M, Al Harthi K, Al-Obaidani T, et al. Predictors of mortality in out-of-hospital cardiac arrest (OHCA) patients: A retrospective cross-sectional study from the Sultanate of Oman. *Indian J Crit Care Med* 2024;28(11):1056-1062. DOI: 10.5005/jp-journals-10071-24824.