

Correspondence



## Response to Clinical Outcomes of Solid Organ Transplant Recipients Hospitalized with COVID-19: A Propensity Score-Matched Cohort Study

Sudip Bhattacharya

Department of Community and Family Medicine, All India Institute of Medical Sciences, Deoghar, Jharkhand, India

► See the article “Clinical Outcomes of Solid Organ Transplant Recipients Hospitalized with COVID-19: A Propensity Score-Matched Cohort Study” in volume 56 on page 329.

Open Access

Dear Editor:

I read this article with great interest. This study offers valuable insights into the clinical outcomes of solid organ transplant recipients (SOTRs) with coronavirus disease 2019 (COVID-19) in Korea. By comparing SOTRs with a matched cohort of non-transplant patients, the research highlights the increased risk of severe disease and poorer clinical trajectories among SOTRs.

The study meticulously adjusts for confounding variables, including age, sex, and time of infection, ensuring robust comparisons. The use of the National Early Warning Score to track clinical deterioration provides a dynamic view of patient outcomes, revealing that SOTRs consistently fare worse during hospitalization despite similar initial severity. Furthermore, the research underscores the critical role of COVID-19 vaccination in mitigating severe disease, demonstrating a clear benefit even in immunocompromised populations. The comprehensive analysis of variables such as oxygen requirements, incidence of acute kidney injury, and

other severe outcomes underscores the vulnerability of SOTRs and supports the need for proactive vaccination and aggressive treatment strategies. This study fills a significant gap in the literature by focusing on a large, well-defined cohort in Korea, offering actionable data to improve patient management and outcomes [1].

However, in my opinion, this study presents several limitations not mentioned by the authors. Firstly, the study was conducted in two hospitals, which might have had different treatment protocols and standards of care, adding variability that can affect the outcomes and complicate the standardization of findings. Future studies should standardize treatment protocols or include multiple centres with harmonized care practices to minimize this variability. While the study used propensity score matching to balance known variables, unmeasured confounding variables, such as socioeconomic status, access to healthcare, and individual health behaviours, could still influence the outcomes. Including these factors in future analyses could help provide a more nuanced understanding of the outcomes.

**Received:** Jun 15, 2024  
**Accepted:** Jul 10, 2024  
**Published online:** Aug 16, 2024

**Corresponding Author:** Sudip Bhattacharya, MD  
Department of Community and Family Medicine, All India Institute of Medical Sciences, Deoghar, Jharkhand 814152, India.  
Tel: +91-88-7239-7092  
Email: drsudip81@gmail.com

© 2024 by The Korean Society of Infectious Diseases, Korean Society for Antimicrobial Therapy, The Korean Society for AIDS, and Korean Society of Pediatric Infectious Diseases

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

The study also focused on in-hospital outcomes without tracking long-term consequences of COVID-19 in SOTRs, such as post discharge complications or long COVID symptoms, which are crucial for understanding the full impact of the disease on this population [2]. Longitudinal studies that follow patients post-discharge could address this gap. The timing of vaccination relative to the infection and the measurement of patients' immune response postvaccination were not accounted for [3], which is significant given the variability in immune responses among SOTRs due to their immunosuppressive therapy. Future research should include detailed vaccination timelines and measure immune responses to better understand vaccine efficacy in this group.

Moreover, while the study matched patients by the time of infection to account for variant differences, it did not specify which SARS-CoV-2 variants were predominant during the study period or how different variants specifically affected outcomes in SOTRs versus non-SOTRs. Future studies should include variant-specific analyses to determine the impact of different strains [4].

The potential impact of different immunosuppressants was acknowledged but not explored in depth due to the small sample size, even though different drugs can have varied effects on COVID-19 outcomes. Larger studies could stratify patients by immunosuppressant type to identify specific risks and benefits.

Additionally, the healthcare system, COVID-19 treatment protocols, and vaccination strategies in Korea may differ from those in other countries, potentially limiting the applicability of the results to other settings. Future research should consider cross-country studies or multi-centre international studies to enhance global applicability.

Lastly, the exclusion of patients undergoing maintenance dialysis, a significant subset of the SOTR population,

limits the understanding of COVID-19 impact across all SOTRs. Including these patients in future studies would provide a more comprehensive understanding of COVID-19's impact on the entire SOTR population. Addressing these limitations in future research could provide a more comprehensive understanding of COVID-19 outcomes in SOTRs and improve the generalizability of the findings.

#### ORCID iDs

Sudip Bhattacharya   
<https://orcid.org/0000-0001-7935-9013>

#### Conflict of Interest

No conflict of interest.

#### Funding

None.

## REFERENCES

1. Lim JH, Nam E, Seo YJ, Jung HY, Choi JY, Cho JH, Park SH, Kim CD, Kim YL, Bae S, Hwang S, Kim Y, Chang HH, Kim SW, Jung J, Kwon KT. Clinical outcomes of solid organ transplant recipients hospitalized with COVID-19: a propensity score-matched cohort study. *Infect Chemother* 2024;56:329-38. [PUBMED](#) | [CROSSREF](#)
2. Mudgal SK, Gaur R, Rulaniya S, T L, Agarwal R, Kumar S, Varshney S, Sharma S, Bhattacharya S, Kalyani V. Pooled prevalence of long COVID-19 symptoms at 12 months and above follow-up period: a systematic review and meta-analysis. *Cureus* 2023;15:e36325. [PUBMED](#) | [CROSSREF](#)
3. Bates TA, Leier HC, McBride SK, Schoen D, Lyski ZL, Lee DX, Messer WB, Curlin ME, Tafesse FG. The time between vaccination and infection impacts immunity against SARS-CoV-2 variants. *medRxiv* [Preprint]. 2023:2023.01.02.23284120. [CROSSREF](#)
4. Denison MR. Coronavirus research: keys to diagnosis, treatment, and prevention of SARS. In: Institute of Medicine (US) Forum on Microbial Threats; Knobler S, Mahmoud A, Lemon S, eds. *Learning from SARS: preparing for the next disease outbreak: workshop summary*. Washington, DC: National Academies Press; 2004.