Poster 2113

IDWeek, October 21–24, 2026
Washington DC, USA

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Impact of Acute COVID-19 on Underlying Chronic Conditions: Systematic Literature Review

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INTRODUCTION

SARS-CoV-2 infection induces systemic inflammation, endothelial dysfunction, and coagulopathy, which can cause organ dysfunction and exacerbate or worsen underlying chronic conditions.[1-3] Although this causal relationship between acute COVID-19 and worsening of underlying chronic conditions has been studied, evidence during Omicron variant predominance remains limited.

OBJECTIVES

This systematic literature review (SLR) aims to assess the burden of acute COVID-19 on clinical outcomes, health-related quality of life (HRQoL), and healthcare resource utilization (HCRU) among people with underlying chronic conditions during SARS-CoV-2 Omicron variant predominance.

METHODS

Databases: Records from Embase and MEDLINE (Sep 1, 2020 – Sep 16, 2025).

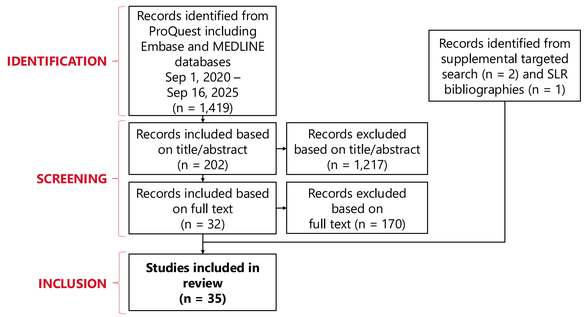
Population: Patients aged ≥12 years with underlying chronic conditions who had acute COVID-19 during the Omicron period (defined as acute infection between Nov 1, 2021 – Sep 16, 2025, or characterized as Omicron by the study) or mixed variant periods overlapping with Omicron.

Studies and outcomes: Included observational studies or clinical trials reporting clinical course, exacerbation risk, HRQoL, or HCRU. Records were excluded if they were non-English, focused exclusively on Long COVID or new diagnoses after COVID-19, did not include data during the Omicron period, or were case reports/case series, narrative reviews, or editorials/commentaries.

Selection: One reviewer reviewed titles and abstracts identified from the initial search; a second reviewer reviewed 20% of the records for quality control. All non-excluded articles were further evaluated with a full-text review following the same process. Additional targeted searching was conducted on Google Scholar and via reference lists of identified systematic reviews. Disagreements were resolved by consensus with a third reviewer.

Reporting: Narrative synthesis.

Figure 1. PRISMA flow diagram



PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses; SLR, systematic literature review.

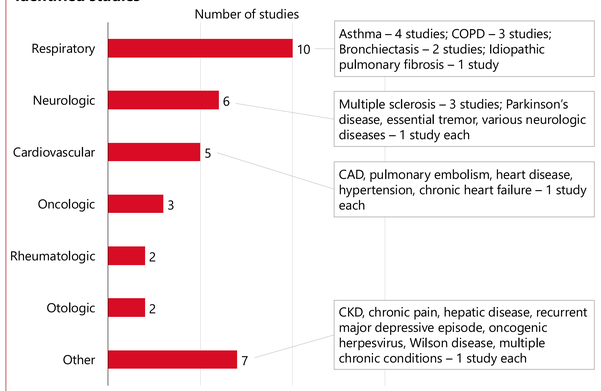
RESULTS

The database search identified 1,419 records, of which 32 met the inclusion criteria. Two supplemental searches resulted in 3 additional records, for a total of 35 studies: 31 full-text articles and 4 conference abstracts **(Figure 1).**

While all studies were required to include COVID-19 data during Omicron, 23 studies also included earlier time periods when other COVID-19 variants were predominant. Most (33 of 35 studies) assessed clinical outcomes, while 8 studies reported on HRQoL and 6 studies assessed HCRU. Outcomes were compared between patients with COVID-19 and controls (e.g., no infection, other infectious disease, or pre-infection) or reported descriptively following COVID-19.

- Studies reporting on respiratory conditions (10 studies) were the most common, followed by neurologic (6 studies), cardiovascular (5 studies), and oncologic conditions (3 studies) (**Figure 2**).

Figure 2. Underlying conditions of patients with acute COVID-19 across identified studies



CAD, coronary artery disease; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; COVID-19, coronavirus disease 2019.

- All studies were observational in design, including cross-sectional, retrospective and prospective cohorts, and case-control studies, and were conducted across a range of countries (**Table 1**).

Table 1. Design and country of identified studies

Study design as reported	Country
• Retrospective cohort: 16 studies • Prospective cohort: 4 studies • Observational/observational cohort/cohort: 7 studies • Cross-sectional: 5 studies • Retrospective cross-sectional: 1 study • Case-control: 1 study • Not reported: 1 study	• USA: 7 studies • China: 6 studies • South Korea: 4 studies • Hong Kong: 3 studies • Iran, Italy: 2 studies each • Belgium, Egypt, Germany, India, Morocco, Romania, Saudi Arabia, South Africa, Switzerland, Taiwan, UK: 1 study each

- 17/33 studies showed statistically significant worsening, exacerbation, or relapse of underlying chronic conditions following acute COVID-19 (selected results in **Figure 3**). The remaining studies reported no statistically significant differences or reported descriptive evidence suggestive of worsening without a formal comparator.

Figure 3. Impact of COVID-19 on clinical outcomes in underlying conditions: selected studies

Asthma	Asthma exacerbation rates were significantly higher in both non-hospitalized and hospitalized patients with COVID-19 compared to non-COVID-19 controls.[4] In another study, the rates of severe asthma exacerbation in patients with COVID-19 of any severity and severe COVID-19 were significantly higher than in matched controls.[5]
COPD	Severe COVID-19 was associated with increased risk of COPD exacerbation compared to matched controls, but there was no significant increase in risk for non-severe COVID-19.[6] In another study, patients with severe COVID-19 had increased odds of annual severe COPD exacerbation frequency compared to a non-COVID-19 group.[7]
Multiple sclerosis	Patients with multiple sclerosis had a significantly higher incidence of clinically relevant Expanded Disability Status Scale worsening in the period after COVID-19 infection than before COVID-19 infection, with a higher proportion of those patients having also experienced hospitalization compared to those who did not show worsening.[8]
CAD	A higher rate of myocardial infarction and major adverse cardiovascular events was found for patients with CAD hospitalized for COVID-19 compared to a non-COVID-19 group. Patients not hospitalized with COVID-19 experienced similar outcomes compared with the non-COVID-19 group.[9]
Pulmonary embolism	Patients with pulmonary embolism on anticoagulants experienced a statistically significantly higher bleeding risk with COVID-19 compared with patients without COVID-19.[10]
CKD	In patients with pre-existing CKD, the COVID-19 group experienced a faster decline in annual eGFR compared to those without COVID-19, and a higher proportion progressed to a more advanced CKD stage compared with those without COVID-19. There was no statistical difference in mortality between these two groups.[11]

CAD, coronary artery disease; CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; COVID-19, coronavirus disease 2019; eGFR, estimated glomerular filtration rate.

- Of 8 studies evaluating PROs and HRQoL, 5 reported worsening outcomes following COVID-19, while the remainder reported neutral or descriptive findings (selected results in **Figure 4**).

Figure 4. Impact of COVID-19 on PROs in underlying conditions: selected studies

Dyspnea in COPD	Patients with COPD who had mild to moderate COVID-19 or severe COVID-19 had significant worsening in dyspnea, as measured by the mMRC dyspnea scale, compared to patients without COVID-19.[7]
HRQoL/ overall health status in neurologic diseases	Patients with neurologic disease reported their current overall HRQoL and overall health status to be significantly worse after COVID-19 compared with before COVID-19, with specific areas negatively impacted including mobility, activities of daily living, and social functioning.[12]
Pain and fatigue in rheumatic diseases	Participants with systemic autoimmune rheumatic diseases and prolonged COVID-19 symptom duration of ≥28 days had significantly worse scores in pain (SF-MPQ) and fatigue (FSI) than participants without prolonged COVID-19 symptom duration.[13]
Major depressive disorder	Patients who experienced a recurrent major depressive episode after COVID-19 reported improvement at 1 and 3 months after antidepressant treatment on several depression and anxiety scales and in the physical component score of the SF-36. However, there was significantly less improvement in the Hamilton Anxiety Rating Scale physical symptoms (at 1 and 3 months) and PDQ-D5 (at 3 months) when compared to a group with a first depressive episode after COVID-19.[14]

COPD, chronic obstructive pulmonary disease; COVID-19, coronavirus disease 2019; FSI, Fatigue Symptom Inventory; HRQoL, health-related quality of life; mMRC, modified Medical Research Council Dyspnea Scale; PDQ-D5, Perceived Deficits Questionnaire for Depression, 5-item version; PRO, patient-reported outcome; SF-36, Short-Form 36-Item; SF-MPQ, Short-Form McGill Pain Questionnaire.

- Among 6 studies evaluating HCRU, 4 reported increased HCRU following COVID-19, while the remaining studies reported neutral or descriptive findings (selected results in **Figure 5**).

Figure 5. Impact of COVID-19 on HCRU in underlying conditions: selected studies

Hospitalizations in non-cystic fibrosis bronchiectasis	The adjusted odds of hospitalization frequency for exacerbation of non-cystic fibrosis bronchiectasis were significantly higher in patients with COVID-19 compared to a non-COVID-19 group across 2 control periods (2019 – 2021 and 2019 only). Statistically significant differences remained for both control periods even when subgroup analyses examined patients with mild COVID-19 that did not require antiviral treatment.[15]
Hospital LOS for lung cancer surgical resection	Patients with a prior COVID-19 infection had a significantly longer mean hospital LOS than patients without prior infection, among those undergoing surgical resection for lung cancer.[16]
HCRU outcomes for lung cancer surgical resection	Patients with a pre-operative history of COVID-19 were matched to those without prior COVID-19. The COVID-19 group reported extended postoperative hospital stays, prolonged surgical durations, and longer chest tube duration compared to those without prior infection.[17]

COVID-19, coronavirus disease 2019; HCRU, healthcare resource utilization; LOS, length of stay.

CONCLUSIONS

- Across studies identified in this review, acute COVID-19, including mild-to-moderate cases in some studies, was associated with clinical worsening, exacerbation, or relapse of several underlying chronic conditions during Omicron predominance.
- COVID-19 was also associated with poorer HRQoL and greater HCRU.
- These findings highlight the continued burden of COVID-19 among individuals with chronic comorbidities, and reinforce the importance of COVID-19 prevention, particularly in populations with these conditions.
- Where worsening was not demonstrated, evidence was often limited by descriptive or non-comparative study designs. Further comparative research is needed to quantify risk and identify patients most vulnerable to poor outcomes.

References

1. Sherman AC, et al. Nat Rev Dis Primers. 2025;11(1):75.
2. Muir KC, et al. Cells. 2026;15(3):234.
3. Lu JY, et al. Sci Rep. 2024;14(1):31451.
4. Duong KE, et al. J Allergy Clin Immunol Pract. 2025;13(8):2087-2094.e3.
5. Lee H, et al. J Allergy Clin Immunol Pract. 2024;12(7):1783-1793.e4.
6. Kim SH, et al. Respir Res. 2025;26(1):116.
7. Kwok WC, et al. Sci Rep. 2024;14(1):13881.
8. Peeters G, et al. Neurol Neuroimmunol Neuroinflamm. 2023; 10(3):e200089.
9. Hadidchi R, et al. EBioMedicine. 2025;116:105778.
10. Li Y, et al. Eur Respir J. 2024;64(suppl 68):PA755.
11. Lu JY, et al. Sci Rep. 2025;15(1):6119.
12. Oh J, et al. Eur Neurol. 2024;87(5-6):230-241.
13. Di Iorio M, et al. Semin Arthritis Rheum. 2022;55:152025.
14. Di Nicola M, et al. Eur Arch Psychiatry Clin Neurosci. 2024;274(3):583-593.
15. Kwok WC, et al. Respirology. 2024;29(3):209-216.
16. Yu AT, et al. Ann Thorac Surg Short Rep. 2025;3(1):156-160.
17. Pan H, et al. Int J Clin Oncol. 2025;30(10):1953-1962.

Disclosures

FD, DV, and MF are employees of Shionogi. BM and SM are employees of OPEN Health, which received funding from Shionogi in connection with this study. ANA reports consulting relationships with Abbott, AbbVie, Aseptiscope, AstraZeneca, Bayer, Bristol Myers Squibb, Ferring, Gilead, Inviwyd, Jiro Health, Novo Nordisk, Pfizer, Renibus, Reprieve, Salix, Sanofi, Seres, and Shionogi; these relationships are unrelated to this study.

Funding

This study was funded by Shionogi Inc., New Jersey, USA.

Acknowledgments

Editorial support was provided by OPEN Health, New York, USA; this support was funded by Shionogi Inc., New Jersey, USA.