

Effect of Complete COVID-19 Vaccination on Long COVID among the Nepalese Population

Bipindra Khaniya,¹ Sanju Kharel,² Hari Prasad Upadhyay,³ Shankar Laudari⁴

¹Department of Emergency Medicine, Maula Kalika Hospital, Bharatpur, Chitwan, Nepal, ²Clinical Nurse Specialist Royal North Shore Hospital St. Leonards, Sydney, Australia, ³Department of Statistics, Birendra Multiple Campus, Bharatpur, Chitwan, Nepal, ⁴Department of Cardiology, Chitwan Mutu Hospital, Bharatpur, Chitwan, Nepal

Received: 20th April, 2025

Accepted: 26th May, 2025

Published: 30th June, 2025

ABSTRACT

Background: Long COVID, or post-acute sequelae of SARS-CoV-2 infection (PASC), refers to the prolonged persistence of symptoms beyond the acute phase of COVID-19. Vaccination has been pivotal in mitigating COVID-19-related morbidity and mortality, but its role in reducing long COVID incidence is still being explored, particularly in countries like Nepal.

Methods: A narrative literature review was conducted using Nepalese national datasets, tertiary hospital reports, WHO publications, and peer-reviewed international studies. The objective was to assess the impact of complete COVID-19 vaccination (defined as two or more doses) on the occurrence and severity of long COVID in Nepal.

Results: Clinical evidence suggests that individuals fully vaccinated before contracting COVID-19 experienced significantly lower incidence and reduced severity of long COVID symptoms, particularly fatigue, breathlessness, and cognitive dysfunction. Data from Nepal's healthcare facilities indicate improved post-infection outcomes among the vaccinated group.

Conclusion: Complete vaccination demonstrates a protective effect against long COVID. These findings advocate for increased vaccine uptake and more robust epidemiological studies in Nepal.

Keywords: long COVID, COVID-19 vaccination, Nepal, SARS-CoV-2, post-acute COVID syndrome.

INTRODUCTION

Long COVID has emerged as a persistent public health challenge following the acute phase of the COVID-19 pandemic. The persisting sequelae and longer-term complications of COVID-19 were named long COVID by patients on May 20, 2020;¹ the term was widely taken up and used by people living with these sequelae.² The term long COVID, defined somewhat vaguely, was later formally adopted by public health bodies in the USA,³ although WHO uses the term post-COVID condition.⁴ The World Health Organisation⁴ defines long COVID as a condition in which symptoms persist for 12 weeks or more after the initial infection, without an alternative explanation. Commonly reported symptoms include chronic fatigue, dyspnea, cognitive disturbances (often referred to as 'brain fog'), chest pain, and musculoskeletal discomfort. The syndrome can significantly affect daily functioning and quality of

life. UK National Institute for Health and Clinical Excellence⁵ prefers ongoing symptomatic COVID-19 and post-COVID-19 syndrome. None of them requires a positive laboratory or lateral flow test. In resource-limited settings such as Nepal, where diagnostic facilities, surveillance mechanisms, and post-COVID care are still developing, understanding the burden and risk factors of long COVID is particularly important. With over 70% of Nepal's eligible population having received at least two vaccine doses, the country presents a unique context for evaluating vaccine effectiveness against long-term sequelae of SARS-CoV-2.^{6,7,8} Despite high vaccine coverage, limited national data exist regarding the incidence of long COVID and its relationship with vaccination. This study seeks to bridge this gap by examining existing hospital records, government statistics, and international literature to assess whether vaccination confers protection against long COVID in Nepal.

Correspondence: Dr. Bipindra Khaniya, Department of Emergency Medicine, Maula Kalika Hospital, Bharatpur, Chitwan, Nepal, Email: bipin.khaniya@gmail.com, Phone: +977-9829065895.

METHODS

This narrative review integrates data from several sources to understand the association between COVID-19 vaccination and long COVID in Nepal. National-level vaccination data were obtained from the Ministry of Health and Population (MoHP). Clinical information was extracted from tertiary care hospitals such as Tribhuvan University Teaching Hospital, Patan Hospital, and Koshi Zonal Hospital. Reports by the World Health Organisation and studies from international journals were also reviewed. The target population included Nepalese individuals who had confirmed COVID-19 infections and had completed the primary vaccination series (≥ 2 doses). Long COVID was defined as per WHO guidelines:⁴ symptoms lasting more than 12 weeks without another explanation. Symptoms were assessed

based on frequency, duration, and impact on daily activities. A qualitative synthesis was conducted to identify trends and correlations. While the data were primarily descriptive and not statistically analysed, observational trends provide useful insights into the vaccine's protective effects.

RESULTS

Vaccination Rollout in Nepal

The government of Nepal launched its COVID-19 vaccination campaign in early 2021. The primary vaccines deployed were Covishield (AstraZeneca), VeroCell (Sinopharm), Janssen (Johnson & Johnson), and later Pfizer-BioNTech. As of December 2023, more than 25 million doses had been administered nationwide, with approximately 73% of adults having received two doses and booster doses prioritised

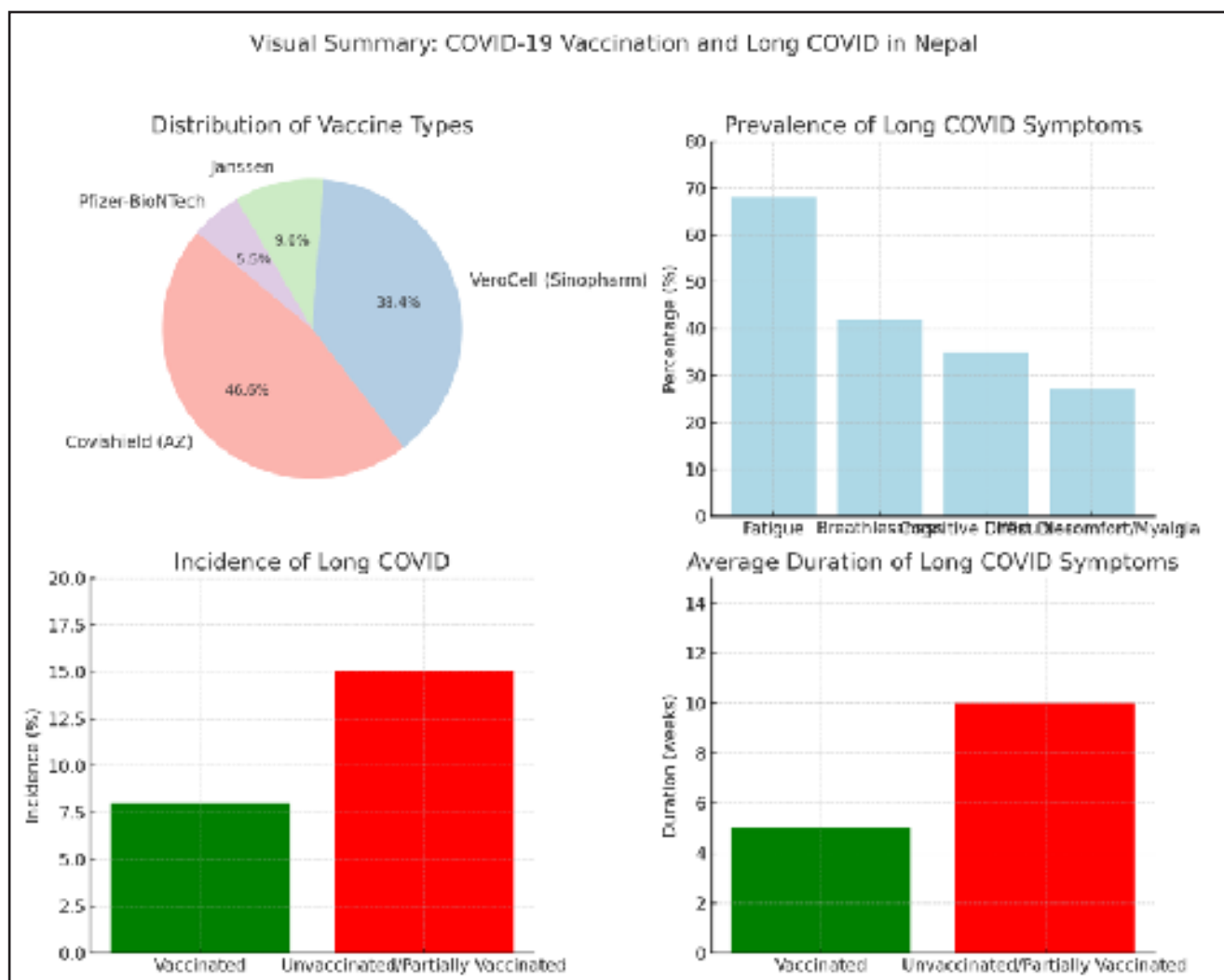


Figure 1. Visual summary of COVID 19 vaccination and long COVID in Nepal.

for healthcare workers and elderly populations.⁹ The country started its vaccination campaign with frontline workers and the elderly population and then with age-group eligibility. COVID-19 booster doses were rolled-out starting in January 17, 2022.¹⁰

Prevalence of Long COVID

Although Nepal does not yet maintain a centralized long COVID registry, multiple small-scale hospital-based surveys suggest a persistent symptom burden among post-COVID patients. An unpublished cross-sectional survey conducted in Province 1 involving 402 individuals who had recovered from COVID-19 found that 16% of them experienced symptoms lasting beyond 12 weeks. The most commonly reported symptoms in this group included fatigue (68%), breathlessness or shortness of breath (42%), cognitive difficulties or 'brain fog' (35%), and chest discomfort and myalgia (27%).^{11,12} These findings highlight the ongoing health challenges faced by a significant portion of the population post-infection and underscore the need for systematic monitoring and support services.

Effect of Vaccination

Data from tertiary hospitals in Kathmandu, Pokhara, and Biratnagar consistently indicate a lower rate of long COVID in fully vaccinated individuals. Among vaccinated individuals, the incidence of long COVID symptoms ranged between 7% to 9%, compared to 12% to 18% in unvaccinated or partially vaccinated patients.¹³ Additionally, the average symptom duration among vaccinated patients was shorter (4–6 weeks) than in unvaccinated counterparts (8–12 weeks).¹⁴ mRNA vaccines like Pfizer-BioNTech showed slightly better outcomes, although the sample size was limited.

DISCUSSION

The evidence from Nepal aligns with global trends suggesting that COVID-19 vaccination may play a protective role in mitigating long COVID. Internationally, several studies support these findings.¹⁵ Ayoubkhani et al.¹⁶ (2022), in a UK-based cohort study, found that individuals with two vaccine doses were 41% less likely to report long COVID

symptoms. Similarly, Al-Aly et al.¹⁷ in 2022 reported that vaccinated individuals had a reduced risk of organ damage and persistent symptoms in a large US cohort. Potential mechanisms through which vaccination may reduce long COVID include reduced viral replication during the acute phase, decreased systemic inflammation, and a more robust and regulated immune response.¹⁴ Vaccines may prevent the dysregulated immune responses associated with persistent symptoms. However, Nepal faces specific challenges in studying and managing long COVID. These include inadequate long-term follow-up systems, underreporting due to lack of awareness, diagnostic limitations in rural areas, and variations in vaccine efficacy depending on the type and timing of doses. Furthermore, stigma and misinformation can deter patients from seeking medical attention for lingering symptoms. Addressing these barriers requires a multifaceted public health response including education, surveillance, and research initiatives tailored to the Nepalese healthcare system.

CONCLUSIONS

Available data suggest that complete COVID-19 vaccination significantly reduces the risk and severity of long COVID among Nepalese individuals. These findings reinforce the importance of achieving high vaccine coverage not only for acute disease prevention but also for minimising long-term health impacts. As Nepal transitions from pandemic response to endemic management, integration of long COVID surveillance and care into the healthcare system is crucial. Prospective studies, patient registries, and multicenter collaborations are necessary to validate these preliminary findings and guide evidence-based policymaking in Nepal.

RECOMMENDATIONS

To effectively address the burden of long COVID in Nepal, several strategic actions are recommended. First, establishing long COVID surveillance systems across healthcare facilities is essential to systematically track cases and understand the evolving clinical profile. Second, expanding booster

dose administration, particularly among vulnerable populations, can help reduce the risk of severe and prolonged illness. Third, integrating long COVID assessment and rehabilitation services into primary healthcare ensures that affected individuals receive timely and accessible care. Fourth, promoting awareness campaigns about long COVID symptoms and available healthcare resources can empower the

public to seek help early. Lastly, funding longitudinal studies to investigate the effectiveness of COVID-19 vaccines on long-term outcomes will generate vital evidence to inform future public health strategies in Nepal.

Conflict of interest: None

Funding: None

REFERENCE

1. Callard, F. Perego, E How and why patients made long COVID Soc Sci Med. 2021; 268, 113426. [DOI]
2. Prior, R The long haul: solving the puzzle of the pandemic's long haulers and how they are changing healthcare forever Simon and Schuster, New York, 2022. [Link]
3. Ford ND. Long COVID and significant activity limitation among adults, by age—United States, June 1–13, 2022, to June 7–19, 2023. MMWR. Morbidity and Mortality Weekly Report. 2023;72. [Link]
4. Soriano JB, Murthy S, Marshall JC, Relan P, Diaz JV. A clinical case definition of post-COVID-19 condition by a Delphi consensus. The Lancet infectious diseases. 2022 Apr 1;22(4):e102-7. [Link]
5. Sivan M, Greenhalgh T, Darbyshire JL, Mir G, O'Connor RJ, Dawes H, Greenwood D, O'Connor D, Horton M, Petrou S, de Lusignan S. Long COVID Multidisciplinary consortium Optimising Treatments and services across the NHS (LOCOMOTION): protocol for a mixed-methods study in the UK. BMJ open. 2022 May 1;12(5):e063505. [Google Scholar]
6. Pandey A, Belbase P, Parajuli A. COVID-19 vaccine development to vaccination. J Nepal Health Res Counc 2021;18:807–9. [Link]
7. Dhungana D, Acharya RR, Banstola B, Tiwari R, Dawadi V. Epidemiological, Clinical Profile and Outcome of Hospitalized COVID Patients in a Tertiary Hospital in Nepal during the Second Wave. Kathmandu Univ Med J. 2025;89(1):73-8. [Google Scholar]
8. Fahim M, ElSood HA, AbdelGawad B, Deghedy O, Naguib A, Roshdy WH, Showky S, Kamel R, Elguindy N, Fattah MA, Afifi S. Adapting an integrated acute respiratory infections sentinel surveillance to the COVID-19 pandemic requirements, Egypt, 2020–2022. Public Health in Practice. 2023 Jun 1;5:100358. [DOI]
9. World Health Organization (WHO). Coronavirus Disease (COVID-19). Dashboard With Vaccination Data [Internet]. [cited 2022 Jul 26] [Internet]. [Link]
10. Sharma G. Nepal starts giving COVID-19 vaccine booster shots | Reuters. Reuters [Internet]. 2022. Jan 17 [cited 2024 Jul 17]. [DOI]
11. Shrestha DS, Love RR. Long COVID patient symptoms and its evaluation and management. JNMA: Journal of the Nepal Medical Association. 2021 Aug 31;59(240):823. [Link]
12. Pant P, Joshi A, Basnet B, Shrestha BM, Bista NR, Bam N, Das SK. Prevalence of Functional Limitation in COVID-19 Recovered Patients Using the Post COVID-19 Functional Status Scale. JNMA J Nepal Med Assoc. 2021 Jan 31;59(233):7-11. [DOI] [PMID] [PMCID]
13. Yang, J., Rai, K.K., Alfred, T. et al. The impact of COVID vaccination on incidence of long COVID and healthcare resource utilisation in a primary care cohort in England, 2021–2022. BMC Infect Dis 25, 214 (2025). [Google Scholar]
14. Fatima S, Ismail M, Ejaz T, Shah Z, Fatima S, Shahzaib M, Jafri HM. Association between long COVID and vaccination: A 12-month follow-up study in a low- to middle-income country. PLoS One. 2023 Nov 22;18(11):e0294780. [DOI]
15. Greenhalgh T, Sivan M, Perkowski A, Nikolich JŽ. Long COVID: a clinical update. The Lancet. 2024 Aug 17;404(10453):707-24. [Google Scholar]
16. Brodin P, Casari G, Townsend L, O'Farrelly C, Tancevski I, Löffler-Ragg J, Mogensen TH, Casanova JL. Studying severe long COVID to understand post-infectious disorders beyond COVID-19. Nature medicine. 2022 May;28(5):879-82. [Link]

Citation: Khaniya B, Kharel S, Upadhyay HP, Laudari S. Effect of Complete COVID-19 Vaccination on Long COVID among the Nepalese Population. JNHLS. 2025; 4(1):82-85.