

Impact of the COVID-19 Pandemic on Asthma Exacerbations: A Retrospective Study in Singapore

The COVID-19 pandemic led to restrictions such as social distancing and lockdowns, which were associated with decreased asthma exacerbations¹. This decline has been attributed to pandemic-related measures, improved air quality, changes in healthcare-seeking behavior, and reduced exposure to respiratory viruses^{1,2}. However, patient variables linked to asthma exacerbations before and after the pandemic remain unexamined. To address this gap, we analyzed the profile of asthma exacerbators in Singapore pre- and post-COVID-19.

This retrospective study included asthma patients seen at a tertiary hospital in Singapore from 2016 to 2023. COVID-19 restrictions began in February 2020. Exacerbators were defined as patients with at least one emergency department (ED) visit during the prespecified period. Those with any ED visit after COVID-19 onset were classified as post-COVID-19 exacerbators. We compared exacerbator profiles using T-tests and chi-square tests, with logistic regression identifying variables linked to post-COVID-19 exacerbators.

Among 35,939 asthma patients, 1,900 pre-COVID-19 exacerbators had a mean of 2.11 ED visits per patient, while 770 post-COVID-19 exacerbators had a mean of 2.91 ED visits. Post-COVID-19 exacerbators were less likely to be GINA Step 2–5 (OR=0.229–0.658, $p<0.01$) or have bronchiectasis (OR=0.468, $p<0.05$) or prior pneumonia (OR=0.734, $p<0.05$) but were more likely to be smokers (OR=2.12, $p<0.001$).

Mean ED visits per patient increased post-COVID-19. Pre-pandemic exacerbators were more likely to be non-smokers, have higher GINA steps, and have prior pneumonia. Changes in healthcare-seeking behavior and air quality during lockdown may explain these trends.

References

- ¹ Shah, S. A., Quint, J. K., & Sheikh, A. (2022). Impact of covid-19 pandemic on asthma exacerbations: Retrospective cohort study of over 500,000 patients in a National English Primary Care Database. *The Lancet Regional Health - Europe*, 19, 100428. <https://doi.org/10.1016/j.lanepe.2022.100428>
- ² Wee, L. E., Conceicao, E. P., Tan, J. Y., Sim, J. X. Y., & Venkatachalam, I. (2021). Reduction in asthma admissions during the COVID-19 pandemic: consequence of public health measures in Singapore. *European Respiratory Journal*, 57(4), 2004493. <https://doi.org/10.1183/13993003.04493-2020>