

Exacerbation of Chronic Obstructive Pulmonary Disease during Outbreak Pandemic

Ulfa Nur Rohmah^{1*} 

Nia Rosliany¹

Ni Made Suarti²

¹ Study Program of Bachelor and Professional in Nursing, Sekolah Tinggi Ilmu Kesehatan RS Husada, Jakarta, Indonesia

² Study Program of Diploma III in Nursing, Sekolah Tinggi Ilmu Kesehatan RS Husada, Jakarta, Indonesia

*Correspondence: Ulfa Nur Rohmah
Departement of Medical Surgical Nursing, Study Program of Bachelor and Professional in Nursing, Sekolah Tinggi Ilmu Kesehatan RS Husada, Jakarta, Indonesia
Tel: +6282376134888
Email: ulfanrh@gmail.com

ABSTRACT

Chronic obstructive pulmonary disease (COPD) during a pandemic is of particular concern because it can worsen the disease. The COVID-19 pandemic is known to cause many deaths and a high spread of the virus. This is a concern for people with COPD regarding the risk of death. The indicator of worsening COPD symptoms is when patients with COPD need to be hospitalized. During the pandemic outbreak, social distancing, use of face masks, and lockdown were implemented. Several studies have reported reduced hospital admissions for COPD exacerbations. It is necessary to intervene judiciously to solve the problem in order to maintain the stability of COPD patients.

Keywords: chronic obstructive; exacerbation; COVID-19; pandemic

Chronic Obstructive Pulmonary Disease (COPD) is the third leading cause of death worldwide (World Health Organization, 2020). The natural course of COPD is characterized by progressive decline in lung function and worsening relapse (GOLD, 2022). COPD exacerbation is a condition of the worsening of this disease over a short period of time. It could have a significant impact on COPD patients under long-term management, associated with the patient's health status, quality of life, length of hospitalization, and economic costs (Saminan et al., 2022).

Exacerbation of COPD cause a high clinical mortality rate, with an average length of stay of approximately 10 days (Montagnani et al., 2020). Since the pandemics began around the world, there have been more than 464 million confirmed cases of Coronavirus Disease 2019 (COVID-19) and more than 6 million deaths reported as of March 17, 2022 (World Health Organization, 2022). The ongoing COVID-19 pandemic was particularly difficult for people with chronic respiratory illness, including people with potential COPD who could be more vulnerable. In patients infected Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and COPD community acquired pneumonia is associated with 1.5-fold increase in mortality. This phenomenon has been associated with the presence of pneumonia, over-long of stay hospitalized, and multiple comorbidities (Sheikh et al., 2022).

Volume 1(2), 64-68

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<http://dx.doi.org/10.55048/jpns.v1i2.19>

e-ISSN 2827-8100

p-ISSN 2827-8496

Received : March 21, 2022

Revised : March 27, 2022

Accepted : March 29, 2022

Published : May 4, 2022



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However, currently study showed during the COVID-19 outbreak period, patients with respiratory diseases including COPD were less frequent among patients hospitalized (Beltramo et al., 2021) and there was reduction admission hospitality for COPD exacerbations (Farrugia et al., 2021; Sarc et al., 2022; Trujillo et al., 2021; Yuan Tan et al., 2020). Another study added it was almost 50% decreased before pre-outbreak pandemic (Alqahtani Id et al., 2021). The mean length of stay for COPD patients was significantly reduced in 2020. It was stated that exacerbation of COPD did not result in an increase in overall severity of exacerbations or mortality (Lawless et al., 2022).

Currently, COPD may not represent a high risk of being infected with the COVID-19 virus. This may be due to the strategy implemented by using Personal Protective Equipment (PPE), social distancing, lockdown, and massive vaccination activities in various countries (GOLD, 2022). In addition, it was revealed a reduction in visits the emergency admissions was associated with an increase in treatment for community-treated COPD exacerbations events among patients with severe COPD during the SARS-CoV-2 lockdown and the level of anxiety increased so behavior changes during the first wave pandemic (McAuley et al., 2021). Lockdown was associated with a 39% reduction in primary care consultations for acute COPD exacerbations and a 46% reduction in COPD-related emergency department visits (Alsallakh et al., 2021). Behavioral measures taken during this period to limit transmission of COVID-19 are likely to have reduced transmission of other respiratory viruses (Lawless et al., 2022). In severe COPD, High adherence to the recommended preventive measures with keeping a social distance and wearing a face mask (Trujillo et al., 2021). The positive attitude of people with respiratory illness to the maintenance of physical intervention indicates that future COPD guidelines require reconsideration of infection control measures (Alqahtani Id et al., 2021). Therefore, the implementation of non-pharmacological interventions for COVID-19 may be one of the actions that can reduce hospitalization rates (Huh et al., 2021).

With the protection strategy implemented in the last 2 years, with strict health protocols. Several countries do not have the same cases due to an increase in COPD cases, particularly COPD exacerbations during the outbreak of

the COVID-19 pandemic. However, it needs further investigation, on the other hand, the findings that asthma or COPD can increase the severity of bronchial asthma/COPD and gout were identified as risk factors for moderate to severe COVID-19 disease, although they were sampled in this study Healthcare workers who have had frequent exposure to COVID-19 (Mallik et al., 2022). Hospitalizations for COPD exacerbation without COVID19 were more common than COPD with COVID-19 during the first outbreak wave, but the latter was related to higher mortality and lower eosinophil counts. This may be related to the fact that the study did not investigate the prehospital use of systemic corticosteroids as a treatment for mortality risk factors for COVID19 among this COPD population, so it requires further analysis at the next time (Cosio et al., 2021). Chronic diseases of COPD patients also should be considered. Chronic diseases such as obesity, chronic obstructive pulmonary disease (COPD), hypertension, diabetes, cardiovascular and chronic kidney disease, poor diet, and smoking may have contributed to a heavy burden of hospitalizations and deaths from COVID-19 (Reyes-Sánchez et al., 2022).

A change in collaboration with the healthcare system during the pandemic, such as avoiding overcrowded emergency room visits, may have led to a shift towards the outpatient treatment of COPD exacerbations, particularly in patients with fewer comorbidities and less severe illnesses. Those patients with fewer comorbidities could cope better with exacerbations at home than patients with multiple comorbidities and a low baseline physiological reserve. Often, these patients tend to be younger, which probably explains the change in the mean age of COPD patients in the post-COVID-19 group. Older patients with more comorbidities and severe COPD experience more frequent exacerbations independent of respiratory viral infections and may not experience the decrease seen in patients with fewer comorbidities (So et al., 2021).

Today, several countries also had got vaccinated as contribute affects the decrease in hospital admissions in COPD patients. A study has shown that COVID19 vaccines are very effective against symptomatic diseases and, above all, against serious and fatal diseases caused by the original SARS-CoV-2 strain (Polack et al., 2020). Approved vaccines are highly protective against SARS-

CoV-2; therefore, the goal should be complete vaccination according to the standard schedule to achieve maximum vaccine efficacy. It should be noted that vaccination cannot eliminate the risk of infection and prevention and control measures should be taken seriously, especially for high-risk categories (Zheng et al., 2022). The COVID19 vaccine gave only temporary systemic inflammation in post-vaccine COPD patients. The need to consult before administering a vaccine for patients with severe COPD as it can cause exacerbations of COPD (Durdevic et al., 2021).

However, because patients with chronic lung disease have avoided hospitalization during the pandemic, special emphasis should be placed on intervention and self-management action plans when treating these patients, and every effort should be made to prevent adverse outcomes of COVID-19 in this COPD patients. COPD sufferers additionally need to remain strongly endorsed to attain vaccination. While the COVID-19 pandemic undoubtedly caused a lot of suffering and death, but there were some positive and unexpected insights that could lead to significant improvements in COPD management in the future.

Declaration of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Acknowledgment

None

Funding

None

Data Availability

None

References

- Alqahtani Id, J. S., Oyelade, T., Aldhahir, A. M., Gonç Alves Mendes, R., Alghamdiid, S. M., Miravittlesid, M., Mandal, S., & Hurst, J. R. (2021). Reduction in hospitalised COPD exacerbations during COVID-19: A systematic review and meta-analysis. *PLOS ONE*, 16(8). <https://doi.org/10.1371/journal.pone.0255659>
- Alsallakh, M. A., Sivakumaran, S., Kennedy, S., Vasileiou, E., Lyons, R. A., Robertson, C., Sheikh, A., & Davies, G. A. (2021). Impact of COVID-19 lockdown on the incidence and mortality of acute exacerbations of chronic obstructive pulmonary disease: national interrupted time series analyses for Scotland and Wales. *BMC Medicine*, 19(1), 124. <https://doi.org/10.1186/s12916-021-02000-w>
- Beltramo, G., Cottenet, J., Mariet, A.-S., Georges, M., Piroth, L., Tubert-Bitter, P., Bonniaud, P., & Quantin, C. (2021). Chronic respiratory diseases are predictors of severe outcome in COVID-19 hospitalised patients: a nationwide study. *European Respiratory Journal*, 58(6), 2004474. <https://doi.org/10.1183/13993003.04474-2020>
- Cosio, B. G., Shafiek, H., Toledo-Pons, N., Iglesias, A., Barcelo, M., Represas-Represas, C., Comeche, L., Catalan, P., Fernandez-Villar, A., Lopez-Campos, J. L., Echave-Sustaeta, J., & Soler-Cataluna, J. J. (2021). Characterization of COPD admissions during the first COVID-19 outbreak. *International Journal of COPD*, 16(May), 1549–1554. <https://doi.org/10.2147/COPD.S312493>
- Durdevic, M., Arora, A., Durdevic, D., Constanta Stan, A., & Naaraayan, A. (2021). Acute COPD Exacerbation After The Second Dose of COVID-19 Vaccine. *Chest*, 160(4), A1760. <https://doi.org/10.1016/j.chest.2021.07.1603>
- Farrugia, Y., Paul, B., Meilak, S., Grech, N., Asciak, R., Camilleri, L., Montefort, S., & Zammit, C. (2021). The Impact of COVID-19 on Hospitalised COPD Exacerbations in Malta. *Pulmonary Medicine*, 1–7. <https://doi.org/10.1155/2021/5533123>
- GOLD. (2022). *Global Initiative for the Diagnosis, Management, and Prevention of Chronic Obstructive Lung Disease* (2022 Report).
- Huh, K., Kim, Y. E., Ji, W., Kim, D. W., Lee, E. J., Kim, J. H., Kang, J. M., & Jung, J. (2021). Decrease in hospital admissions for respiratory diseases during the COVID-19 pandemic: A nationwide claims study. *Thorax*, 76(9), 939–941. <https://doi.org/10.1136/thoraxjnl-2020-216526>
- Lawless, M., Burgess, M., & Bourke, S. (2022). *Impact of COVID-19 on Hospital Admissions for COPD Exacerbation:*

- Lessons for Future Care. <https://doi.org/10.3390/medicina58010066>
- Mallik, U., Mahmud, R., Azad, S., Moniruzzaman, Khatun, T., Rafiquzzaman, M., Poddar, S. K., Hoque, M. M., Miah, T., & Rahman, M. (2022). SARS-CoV-2 Infection and Risk Stratification among Healthcare Workers in the Largest COVID-19 Dedicated Tertiary Care Hospital in Dhaka, Bangladesh. *Journal of Medicine*, 23(1), 5–12. <https://doi.org/10.3329/jom.v23i1.57930>
- McAuley, H., Hadley, K., Elneima, O., Brightling, C. E., Evans, R. A., Steiner, M. C., & Greening, N. J. (2021). COPD in the time of COVID-19: an analysis of acute exacerbations and reported behavioural changes in patients with COPD. *ERJ Open Research*, 7(1), 00718–02020. <https://doi.org/10.1183/23120541.00718-2020>
- Montagnani, A., Mathieu, G., Pomeroy, F., Bertù, L., Manfellotto, D., Campanini, M., Fontanella, A., Sposato, B., Dentali, F., Bonzini, M., Greco, A., Orlandini, F., Panuccio, D., Pietrantonio, F., & Sciascera, A. (2020). Hospitalization and mortality for acute exacerbation of chronic obstructive pulmonary disease (COPD): An Italian population-based study. *European Review for Medical and Pharmacological Sciences*, 24(12), 6899–6907. https://doi.org/10.26355/eurev.202006_21681
- Polack, F. P., Thomas, S. J., Kitchin, N., Absalon, J., Gurtman, A., Lockhart, S., Perez, J. L., Marc, G. P., Moreira, E. D., Zerbini, C., Bailey, R., Swanson, K. A., Roychoudhury, S., Koury, K., Li, P., Kalina, W. V., Cooper, D., Frenck, R. W., Hammitt, L. L., ... Gruber, W. C. (2020). Safety and Efficacy of the BNT162b2 mRNA Covid-19 Vaccine. *The New England Journal of Medicine*, 383(27), 2603–2615. <https://doi.org/10.1056/NEJMoa2034577>
- Reyes-Sánchez, F., Basto-Abreu, A., Torres-Alvarez, R., Canto-Orsorio, F., González-Morales, R., Dyer-Leal, D. D., López-Ridaura, R., Zaragoza-Jiménez, C. A., Rivera, J. A., & Barrientos-Gutiérrez, T. (2022). Fraction of COVID-19 hospitalizations and deaths attributable to chronic diseases. *Preventive Medicine*, 155, 106917. <https://doi.org/10.1016/j.ypmed.2021.106917>
- Saminan, S., Julisafrida, L., Ridwan, M., & Fajri, N. (2022). COVID-19 Pandemic : What Considerations Should Be Taken during the Assessment and Management of COPD Exacerbation ? COVID-19. *Open Access Macedonian Journal of Medical Sciences*, 10, 71–80. <https://doi.org/https://doi.org/10.3889/oamjms.2022.7930>
- Sarc, I., Lotric Dolinar, A., Morgan, T., Sambt, J., Zihler, K., Gavric, D., Selb, J., Rozman, A., & Dosenovic Bonca, P. (2022). Mortality, seasonal variation, and susceptibility to acute exacerbation of COPD in the pandemic year: a nationwide population study. *Therapeutic Advances in Respiratory Disease*, 16, 1–15. <https://doi.org/10.1177/17534666221081047>
- Sheikh, D., Tripathi, N., Chandler, T. R., Furmanek, S., Bordon, J., Ramirez, J. A., & Cavallazzi, R. (2022). Clinical outcomes in patients with COPD hospitalized with SARS-CoV-2 versus non- SARS-CoV-2 community-acquired pneumonia. *Respiratory Medicine*, 191, 106714. <https://doi.org/10.1016/j.rmed.2021.106714>
- So, J. Y., O'Hara, N. N., Kenaa, B., Williams, J. G., DeBorja, C. L., Slejko, J. F., Zafari, Z., Sokolow, M., Zimand, P., Deming, M., Marx, J., Pollak, A. N., & Reed, R. M. (2021). Decline in COPD Admissions During the COVID-19 Pandemic Associated with Lower Burden of Community Respiratory Viral Infections. *American Journal of Medicine*, 134(10), 1252–1259.e3. <https://doi.org/10.1016/j.amjmed.2021.05.008>
- Trujillo, C., Garnet, B., Zadeh, A. V., Urdaneta, G., & Campos, M. (2021). Decrease in exacerbations during the coronavirus disease 2019 pandemic in a cohort of veterans with COPD. *Chronic Obstructive Pulmonary Diseases*, 8(4), 572–579. <https://doi.org/10.15326/JCOPDF.2021.0234>
- World Health Organization. (2020). *The top 10 causes of death*. <https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>
- World Health Organization. (2022). *WHO Coronavirus (COVID-19) Dashboard*. <https://covid19.who.int/>
- Yuan Tan, J., Philip Conceicao, E., En Wee, L., Ying Jean Sim, X., & Venkatachalam, I. (2020). COVID-19 public health measures: a reduction in hospital

- admissions for COPD exacerbations. *Thorax*, 1–2. <https://doi.org/10.1136/thoraxjnl-2020-216083>
- Zheng, C., Shao, W., Chen, X., Zhang, B., Wang, G., & Zhang, W. (2022). Real-world effectiveness of COVID-19 vaccines: a literature review and meta-analysis. *International Journal of Infectious Diseases*, 114, 252–260. <https://doi.org/10.1016/j.ijid.2021.11.00>