

# Indoor Air Quality and Severity of COVID-19: Where Communicable and Non-communicable Preventive Measures Meet

REZA AFSHARI

<sup>1</sup>Division of Occupational and Environmental Health, School of population and Public Health, University of British Columbia, Vancouver, British Columbia, Canada

How to cite this article: Afshari R. Indoor Air Quality and Severity of COVID-19: Where Communicable and Non-communicable Preventive Measures Meet. *Asia Pac J Med Toxicol* 2020;9:1-2.

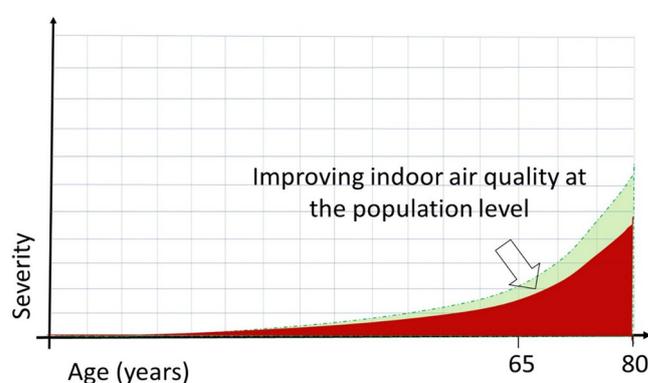
Outdoor and Indoor Air Quality and Severity of COVID-19: Where Communicable and Non-communicable Preventive Measures Meet

The COVID-19 pandemic has opened up new realities for health systems. Scientists and health officials are currently focusing on implementing infectious disease prevention measures to slow or stop transmission, including handwashing, physical distancing, stay home orders, and quarantine.

It has become apparent in recent months that, as with other infections, some people exposed to the coronavirus will experience severe symptoms, and less than one to four percent will die. COVID-19 is more severe in sensitive populations, including the elderly and people with chronic disease and immunodeficiency, which highlights the importance of environmental and host factors in the development of the disease. Along with hygiene measures, the fight against COVID-19 must include noncommunicable disease prevention measures to improve the environment and build host resilience against infection. The negative immunomodulatory role of toxicants is widely established (1). Both acute and chronic exposure to chemicals, such as air pollutants, contributes to an increased incidence of diseases, including cancer and allergies, and can exacerbate underlying respiratory disorders and infections in children and adults (2, 3). Therefore, it is relevant to develop a model that links air pollution exposure with the increased rate and severity of COVID-19t.

We already know that the COVID-19 pandemic and air quality are associated, as quarantine, stay home orders, and light traffic have led to better outdoor air quality in China (4). Improved air quality should help reduce the exacerbation of underlying respiratory disorders and infections and strengthen the general health and immune systems of the population, which should ultimately reduce the severity of this respiratory pandemic.

The proposed link also highlights the potential effects of improving indoor air quality as a support measure against the COVID-19 pandemic, especially for the elderly and patients



**Figure 1. The severity of COVID-19 and age of patients. Improving indoor air quality helps reduce the prevalence, severity and mortality at the population level (simulated inferential model).**

with underlying respiratory diseases and immunodeficiency (Figure 1). Recommendations by health authorities to stay home has increased daily exposure to indoor air. In addition, cooking at home due to closed restaurants decreases the quality of indoor air.

COVID-19 public messages should include indoor air quality management, such as regularly opening windows to improve ventilation. This communication is especially important for the elderly and immunocompromised, and residents of cold regions and rural areas where the wood stove is the primary source of cooking and heating.

Lastly, public messaging in the fight against COVID-19 should include avoiding toxic substances, in order to strengthen underlying health and the immune system. Measures to stay healthy include consuming healthy food and water, and by quitting smoking and excessive drinking, controlling stress, getting adequate sleep, and exercising to maintain a healthy weight.

**Conflict of interest:** None to be declared.

\*Correspondence to: Dr. Reza Afshari; MD, MPH, PhD. Division of Occupational and Environmental Health, School of Population and Public Health, University of British Columbia, Canada.

Tel: +1 604 996185, E-mail: [Reza.Afshari@UBC.CA](mailto:Reza.Afshari@UBC.CA)

Received 8 March 2020; Accepted 15 March 2020

---

## REFERENCES

---

1. Mishra KP. Lead exposure and its impact on immune system: a review. *Toxicol In Vitro* 2009;23:969-72.
2. Carugno M, Dentali F, Mathieu G, Fontanella A, Mariani J, Bordini L, et al. PM10 exposure is associated with increased hospitalizations for respiratory syncytial virus bronchiolitis among infants in Lombardy, Italy. *Environ Res* 2018;166:452-7.
3. Billionnet C, Gay E, Kirchner S, Leynaert B, Amnesi-Maesano I. Quantitative assessments of indoor air pollution and respiratory health in a population-based sample of French dwellings. *Environ Res* 2011;111:425-34.
4. McGrath M. Coronavirus: Air pollution and CO2 fall rapidly as virus spreads. BBC News. 2020 March 19. Available from: <https://www.bbc.com/news/science-environment-51944780>