



COVID-19 and NCD risk factors

OBESITY



Obesity increases the risk for severe symptoms of COVID-19. In a study in France,¹ the odds of developing severe COVID-19 were seven times higher in patients with obesity. In a study in China² overweight individuals were more likely to die from COVID-19 than those of healthy weight.

SMOKING



In a meta-analysis,³ **smokers were 1.5 times more likely to have severe complications from COVID-19** and had a higher mortality rate.

ALCOHOL



Alcohol impairs the body's ability to fight infections such as COVID-19.⁴ Even a single heavy drinking session can measurably reduce immune function. Intoxication can also interfere with taking precautions against infection.

PHYSICAL INACTIVITY



Physical activity provides multiple short- and long-term health benefits, including improving the immune system, stress and anxiety.⁵ **Physical activity is also associated with prevention of heart disease, hypertension, diabetes and overweight and obesity, which are risk factors for severe COVID-19 disease.**⁶

POLLUTION



A relation between exposure to air pollution and mortality from COVID-19 has been hypothesized.⁷ **Air pollution compromises lung function, which increases the risk for vulnerability to respiratory infection, including COVID-19.**

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3 Alqahtani J, et al. Prevalence, severity and mortality associated with COPD and smoking in patients with COVID-19: a rapid systematic review and meta-analysis. *PLoS One*. 2020;15(5):e0233147.
4 WHO Regional Office for Europe. Alcohol and COVID-19: what you need to know. Copenhagen: WHO Regional Office for Europe; 2020. http://www.euro.who.int/_data/assets/pdf_file/0010/437608/Alcohol-and-COVID-19-what-you-need-to-know.pdf.
5 Nieman DC et al. The compelling link between physical activity and the body's defense system. *J Sport Health Sci*. 2019;8(3):201-17.
6 WHO. Global action plan on physical activity 2018–2030: more active people for a healthier world.
7 Liang D, et al. Urban air pollution may enhance COVID-19 case-fatality and mortality rates in the United States. 2020. medRxiv. doi: <https://doi.org/10.1101/2020.05.04.20090746> (<https://www.medrxiv.org/content/10.1101/2020.05.04.20090746v1>).



COVID-19 and NCDs

DIABETES



A systematic review⁸ indicated that **people with diabetes were up to three times more likely to have severe symptoms or die from COVID-19**, and the situation is likely to be worse for people with uncontrolled diabetes.⁹

CARDIOVASCULAR DISEASE



A meta-analysis showed that **hypertension, cardiovascular and cerebrovascular disease increased the odds for severe COVID-19** by 2.3, 2.9 and 3.9 times, respectively.¹⁰ Another meta-analysis indicated that hypertension increased the risk of mortality from COVID-19 by 3.5 times.¹¹

RESPIRATORY DISEASE



In a meta-analysis, **patients with chronic obstructive pulmonary disease (COPD) were at increased risk of severe complications or death from COVID-19**.¹² A study in the United Kingdom suggested that the presence of respiratory disease, including asthma, increased patients' risk of mortality from COVID-19.¹³

CANCER



Cancer patients are more likely to experience severe COVID-19.¹⁴ A study in Wuhan, China, showed that the **mortality rate from COVID-19 was significantly increased in patients with cancer and was particularly high among those with blood cancers**.¹⁵

8 Roncon L, et al. Diabetic patients with COVID-19 infection are at higher risk of ICU admission and poor short-term outcome. *J Clin Virol*. 2020;127. doi:10.1016/j.jcv.2020.104354.

9 Williamson E, et al. Factors associated with COVID-19-related death using OpenSAFELY. *Nature*. 2020 (<https://doi.org/10.1038/s41586-020-2521-4>).

10 Wang B, et al. Does comorbidity increase the risk of patients with covid-19: Evidence from meta-analysis. *Aging (Albany NY)*. 2020;12(7):6049–57.

11 Zhang J, et al. Associations of hypertension with the severity and fatality of SARS-CoV-2 infection: a meta-analysis. *Epidemiol Infect*. 2020;148. doi:10.1017/S095026882000117X.

12 Alqahtani J, et al. Prevalence, severity and mortality associated with COPD and smoking in patients with COVID-19: a rapid systematic review and meta-analysis. *PLoS One*. 2020;15(5):e0233147.

13 Williamson E, et al. OpenSAFELY: factors associated with COVID-19-related hospital death in the linked electronic health records of 17 million adult NHS patients. *medRxiv*. doi.org/10.1101/2020.05.06.20092999.

14 Tian J, et al. Clinical characteristics and risk factors associated with COVID-19 disease severity in patients with cancer in Wuhan, China: a multicentre, retrospective, cohort study. *Lancet Oncol*. 2020;21(7):893.

15 Meng Y, et al. Cancer history is an independent risk factor for mortality in hospitalized COVID-19 patients: a propensity score-matched analysis. *J Hematol Oncol*. 2020;13(1):75.