

COVID-19 and chronic diseases

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Translated from Le Journal de Montréal, April 6th, 2020

The majority of patients who develop severe forms of coronavirus disease (COVID-19) have pre-existing chronic conditions such as hypertension, cardiovascular disease and type 2 diabetes.

Studies to date show that a high proportion of COVID-19 patients are affected by a poor health condition. In Wuhan, China, for example, a study found that among patients with more severe forms of the disease who were admitted to intensive care, 58% had hypertension, 25% had cardiovascular disease, and 22% had type 2 diabetes (1). The contribution of these pre-existing chronic diseases to the severity of COVID-19 is particularly striking in Italy, one of the countries hardest hit by the coronavirus: a recent analysis reveals that 99% of people who died from this disease presented at least one chronic health problem, the most common being hypertension (76%), type 2 diabetes (36%), coronary heart disease (33%), atrial fibrillation (25%) or cancer (20%) (2).

The comparison of COVID-19 mortality rates illustrates the enormous influence of chronic diseases on the severity of the disease, with increases 5 to 10 times compared to people who do not have pre-existing pathologies (3).

THE RISKS OF BEING OVERWEIGHT

The incidence of all chronic diseases increases enormously as we age. This contributes to the very high mortality rate (around 14%) of COVID-19 observed in very old people (80 years and over). In the Italian study mentioned earlier, half of the deceased were simultaneously affected by three different chronic conditions, which necessarily increases the risk of complications.

It is not only the elderly who are at risk of developing severe and life-threatening forms of COVID-19. In several western countries, including Canada, an ever increasing proportion of middle-aged adults are overweight and at the same time at high risk of being in poor metabolic health (resistance to insulin, fasting hyperglycemia, chronic inflammation). Numerous studies suggest that these metabolic disturbances could decrease immunity to infectious agents such as viruses or predispose to developing complications from the infection. For example, during the H1N1 epidemic of 2009, obese people were twice more likely to be hospitalized following infection with this virus than the general population, with a higher risk of mortality observed for morbidly obese.

Similar results were observed during the epidemic caused by the Middle East Respiratory Syndrome (MERS-CoV) coronavirus in 2013, and there is concern about a similar phenomenon during the current COVID-19 epidemic. In this sense, it should be mentioned that in England, a census by the Intensive Care National Audit and Research Center (ICNARC) of cases of COVID-19 requiring hospitalization in intensive care revealed that the mortality rate of obese patients (BMI \geq 30) was 61%, compared to 42% among those of normal weight (4). A study of a group of 24 very ill



patients from the Seattle area, with an average BMI of 33 and over, half of whom are affected by type 2 diabetes, suggests a similar phenomenon (5).

In sum, it has long been known that preventing chronic disease remains the key to improving healthy life expectancy. The COVID-19 epidemic shows that preventing these chronic diseases seems to be paramount to reducing the risk of serious complications from viral infections.

PRE-EXISTING PATHOLOGIES	
	COVID-19 mortality rate (%)
None	0.9
Cancer	5.6
Hypertension	6.0
Respiratory disease	6.3
Type 2 diabetes	7.3
Cardiovascular disease	10.5

- (1) Wang D et coll. Clinical characteristics of 138 hospitalized patients with 2019 novel coronavirus–infected pneumonia in Wuhan, China. JAMA 2020; 323: 1061-1069.
- (2) Istituto Superiore di Sanita (2020). Report sulle caratteristiche dei pazienti deceduti positivi a COVID-19 in Italia Il presente report è basato sui dati aggiornati al 17 Marzo 2020.
- (3) The Novel Coronavirus Pneumonia Emergency Response Epidemiology Team. The Epidemiological Characteristics of an Outbreak of 2019 Novel Coronavirus Diseases (COVID-19) — China, 2020. China CDC Weekly 2020; 2: 1-10.
- (4) Report on 775 patients critically ill with COVID-19 icnarc.org/About/Latest-News/2020/03/27/Report-On-775-Patients-Critically-Ill-With-Covid-19
- (5) Bhatraju PK et coll. Covid-19 in Critically Ill Patients in the Seattle Region — Case Series N. Engl. J. Med., [published online ahead of print, 2020 Mar 30].